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SAFE PRACTICES IN THE INDUSTRIAL USE OF CARBON TETRACHLORIDE

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AND
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Carbon tetrachloride, being the cheapest noninflammable solvent obtainable, has been in use in increasing amounts for over thirty years as a fire extinguisher, as a dry cleaning agent and for degreasing, fat extraction and similar purposes, as well as in medicine, more or less, as an anthelmintic and a cleansing agent in dermatology. From time to time reports have appeared in the literature on nonfatal and at times fatal poisonings from its careless use.[1] These reports and experimental work have indicated however that, if properly used in industry in closed processes, or with adequate exhaust ventilation in open processes, or in limited amounts in the open air, no harm will result.

The acute toxicity of its vapors is fairly well understood and Lehmann [2] gives 1,600 volumes of vapor per million volumes of air (parts per million) as safe for short exposures, although we feel that this is safe for only ten to thirty minutes. McCord,[3] on the basis of a comparatively brief exposure of rabbits, concludes that the safe limit for continuing exposures is somewhat below 500 parts per million; but, since Lehmann [2] has stated that rabbits are particularly susceptible to vapors of this type, because of a tendency to develop toxic pneumonia, this figure must be accepted as tentative. Davis,[4] as the result of a limited number of tests with human beings, concludes that more than 100 parts per million may be hazardous but that single exposures to small concentrations do not produce lasting injury. No other published work attempts definitely to fix a safe concentration for continuous exposure, and the reports quoted are not based on sufficient subjects or on long enough intervals to assure their adequacy, although they do indicate that low concentrations are reasonably safe.

The present work was undertaken in an effort to fill some of the gaps in previous work, to establish definitely safe concentrations for continuous exposure, to determine if possible what clinical signs might be taken as evidence of early toxic action, and to determine to what concentrations workers are being exposed, correlating the concentrations with physical examinations when possible. Details of methods and results cannot be given in the space of the present paper but are all a matter of record elsewhere.[5]

ANIMAL EXPERIMENT

A total of 333 animals was used, together with their offspring during the year of study, and included guinea-pigs, white rats and monkeys. About half of the pigs were fed 1.2 Gm. of calcium lactate a day in addition to their regular diet to determine protective action. Animals were exposed eight hours a day five days a week for ten and one-half months (225 exposures were made in all) to controlled, accurately measured concentrations of pure carbon tetrachloride vapors in concentrations of 25, 50, 100, 200 and 400 parts per million. It is of interest to know that the usual commercial grades are almost pure, containing only about 0.2 per cent of foreign matter, chiefly carbon disulfide, far too little to affect vapor toxicity. Studies of micropathologic changes of the liver, kidney, spleen, adrenal, heart, sciatic and optic nerve, and ocular muscle were made.

The guinea-pigs were quite susceptible to the vapors, many dying, in line with Lehmann's [2] statement as to the sensitivity of the very similar rabbits. No monkeys died, and only two rats, the latter after more than 100 exposures to 400 parts per million. No effect on alertness and general good health was seen. No abnormalities were found in blood counts, although active red cell destruction took place in the spleen. No effect on urine chemistry was seen, but many rats showed high icteric indexes, van den Bergh tests and low blood calciums, although these developed irregularly after definite liver changes were seen. Monkey blood chemistry was normal. The rats exposed to 50 parts per million grew more rapidly than did the controls, those exposed to 100 parts per million equaled the controls and those exposed to 200 and 400 parts per million grew a little slower. The rats exposed to 50 parts per million were 40 per cent more fertile than the controls, those exposed to 100 parts per million equaled the controls, and those exposed to 200 and 400 parts per million were less fertile. The addition of calcium to the diet of guinea-pigs increased resistance to the vapors but did not increase blood calcium.

Typical cirrhosis of the liver was produced in guinea-pigs that survived long enough to reach this stage as well as in rats, but no monkey was sufficiently injured. A surprisingly great degree of regeneration in both liver and kidney originally damaged by exposure took

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1. Smyth, H. F.: Carbon Tetrachloride in Industry, Indust. Med. **4**: 12-15 (Jan.) 1935.
2. Lehmann, K. B., in Kobert: Kompendium der praktischen Toxikologie zum Gebrauche für Aertze, Studierende und Medizinalbeamte, ed. 5, Stuttgart, 1912.
3. McCord, C. P.: Carbon Tetrachloride, Indust. Med. **1**: 151-157 (Dec.) 1932.
4. Davis, P. A.: Carbon Tetrachloride as an Industrial Hazard, J. A. M. A. **103**: 962-965 (Sept. 29) 1934.
5. Smyth, H. F.; Smyth, H. F., Jr., and Carpenter, C. P.: The Chronic Toxicity of Carbon Tetrachloride, J. Indust. Hyg. & Toxicol. **18**: 277 (May) 1936.

place while exposures continued, and within four to eight weeks after exposures were stopped almost all animals had normal livers save for contracted bands of connective tissue, and kidneys also appeared normal. After this rest period the tissues of even monkeys exposed to 225 days at 200 parts per million (the highest concentration monkeys received) were completely normal on microscopic examination. Definite adrenal damage was seen in guinea-pigs but not in rats or monkeys.

TABLE 1.—*Summary of Carbon Tetrachloride Vapor Concentrations Found in Industry*

Description of Process	Number Tested	Average P.p.M. During Cycle: Maximum	Median	Minimum	Peak P.p.M. in Any Half Minute
Dry cleaning					
Closed machine; clothes nearly odorless when handled	9	71	29	10	1,250
Open machine in ventilated booth; small window for manipulation	4	234	72	49	1,020
Open machine in ventilated booth; open end, man works in booth	12	230	52	18	1,510
Other uses of carbon tetrachloride					
General room air distant from source of vapor	6	54	29	0	1,230
Closed process; usually no odor of solvent	3	84	62	59	800
Solvent must evaporate to fulfil its purpose; ventilated	9	119	62	11	494
Vapors vent to room, as in filling cans and drums	23	650	70	14	2,050
Cleaning tanks, filters, and centrifuges	8	620	251	72	7,860

Acting on the suggestion of MacNider's [6] paper on the increased resistance of liver cells regenerated after injury produced by uranium, a few comparisons were made of the resistance to toxic effect from short anesthetizing exposures (thirty minutes to 20,000 parts per million = 2 per cent) after rats had been allowed to recover for from one to two months following six months or more of exposure to low concentrations. Definite marked injury was produced in the livers and kidneys of previously unexposed rats but only slight injury or no injury at all in these organs of animals previously exposed to concentrations of from 50 to 400 parts per million. As far as one can argue from this limited experiment, involving only thirteen rats, it seems that recovery from previous exposure endows the animals with more than normal resistance to injury from carbon tetrachloride.

6. MacNider, W. deB.: The Resistance of Fixed Tissue Cells to the Toxic Action of Certain Chemical Substances, Science **81**: 601-605 (June 21) 1935.

As a result of these experiments, on the assumption that, of the animals used, monkeys resemble human beings most closely and rats next most closely, it is believed that 100 parts per million is a safe concentration for continuous exposure to carbon tetrachloride vapors. It is believed that exposures of small omnivorous animals to vapors eight hours a day from early adolescence to decline of fertility, as was done here, is equivalent to many years of exposure of adult human beings in toxic action, owing to physiologic action during tissue growth. Pups of rats exposed to 50 parts per million were exposed from birth and were no more affected than were their parents, nor were any pups more affected than were their parents.

VAPOR CONCENTRATIONS FOUND IN INDUSTRY

For measurement of concentrations of carbon tetrachloride vapor in establishments manufacturing the solvent and using it, a 50 cm. portable Zeiss interference refractometer (or interferometer) was used. Samples of air were taken from a point near the worker's nose at intervals of from ten seconds to five minutes, spaced to give a reliable average of working conditions and to catch any peaks of concentration created by the job. Tests were made throughout the five plants manufacturing the solvent in this country, in the plants of twenty-three dry cleaning establishments using five different makes of machine, and in eight plants repacking the solvent or using it in chemical processes. The dry cleaning establishments visited were all well cared for installations, so they actually represented the best conditions rather than the average conditions of the industry. A total of 2,000 measurements was made, the results being summarized in table 1.

Because of condensation of data, the table does not give the true average exposure of the workmen during their eight hour day, giving only the average for the process. When the usual time a man works at a given job is considered, only two of the plants visited provided jobs in which average concentrations were above 100 parts per million, which the animal work indicated to be a safe concentration. It is our experience that high concentrations of this and other volatile materials in work places are usually due to overlooked leaks or to ignorance of the need of care rather than to inherent properties of the solvents.

TABLE 2.—*Abnormal Changes in Physical Examination of Workmen*

	Men Examined	No Abnormality	One Abnormality	Two Abnormalities	Three Abnormalities	Visual Field	Lymphocytes	Monocytes	Icteric Index	Blood Calcium	Van den Bergh	Urine Nitrogen	Urine Sulfate	Urine Bilirubin
Limit adopted for normal range	..	..	..	..	..	—30°	6,000	600, 10%	9	7.0	0.2	35.0	2.25	0
Exposure averaging above 100 p.p.m. (maximum 117 p.p.m.)	8	4	4	0	0	2	0	0	0	1	0	1	0	0
Exposure averaging below 100 p.p.m. (5 to 90 p.p.m.)	78	38	28	9	3	7	3	10	18	12	5	0	0	0
Exposure not measured but known not to be extreme	10	5	2	3	0	1	0	1	3	2	1	0	0	0
Totals	96	47	34	12	3	10	3	11	21	15	6	1	0	0

PHYSICAL EXAMINATIONS

Physical examinations were made of ninety-six workers exposed to carbon tetrachloride vapors at their jobs; in most cases determinations were made at the particular point of work of these men. It is significant of the care being taken in the industry today that the highest average daily exposures found were 117 and 111 parts per million. The only peak concentrations

found to exceed 1,000 parts per million in places where men who were examined worked were 1,680 and 1,252 parts per million, but several men worked with air helmets in which peaks were over 1,000 parts per million. These peaks invariably lasted only one-half minute or thereabouts.

Wirtschafter [7] reported concentric restriction of visual fields as probably being significant of carbon tetrachloride injury. We fully realize that a number of factors make our measurements of visual fields uncertain, because of the conditions of work necessary in factories and because of the use of a portable perimeter only. The measurements therefore must be regarded as approximate and subject to correction if repeated in an ophthalmologist's office. Dr. Burton Chance, Philadelphia ophthalmologist, aided in interpreting the fields obtained. These were considered definitely restricted and possibly significant of carbon tetrachloride injury in the present study when the restriction toward the bottom and outer edge was 30 degrees or more.

Although it is realized that continuing toxic exposure may produce anemia, and examination of animal spleens indicated active red blood cell destruction, no worker was found with this condition. Following Boerner,[8] 6,000 lymphocytes per cubic millimeter and 600 monocytes were considered normal maximums. Minot and Smith's [9] studies with perchlorethane governed the addition of 10 per cent monocytes as a maximum, so that if either the percentage or the absolute number exceeded one of these figures it was considered abnormal. Icteric indexes of 8, and indirect van den Bergh reactions of 0.2 per hundred cubic centimeters are considered normal maximums, and blood calcium of 7 mg. per hundred cubic centimeters is considered a normal minimum. Blood sugar was not determined in order to avoid making too great a demand on the workers. A total of 35 Gm. of nitrogen in a twenty-four hour specimen of urine and 2.25 Gm. of total sulfate were taken as normal maximums. Takahashi [10] reported both values raised in injury caused by carbon tetrachloride. Bilirubin or albumin was not found in any urines.

For susceptible workers, length of exposure may be important, but nineteen workers were examined each of whom had worked at least ten years with carbon tetrachloride and one of them twenty-five years, none with any evidence of severe injury. Eleven of the nineteen showed no departures from normal at all, five showed only one minor departure each among the eight tests already mentioned, and three showed two minor departures each.

While one might usually anticipate rather definite correlation between degree or duration of exposure and evidence of injury, personal susceptibility not infrequently varies greatly, as do contributing factors such as habits, diet and the use of stimulants, so that correlations may not be found. Low calcium and low carbohydrate diets, especially, increase toxic action of carbon tetrachloride, as does the excessive use of alcohol.

7. Wirtschafter, Z. T.: Toxic Amblyopia and Accompanying Physiological Disturbances in Carbon Tetrachloride Intoxication, Am. J. Pub. Health **23**: 1035-1038 (Oct.) 1933.

8. Boerner, F.: Standard Normals and Normal Ranges in Hematology, Am. J. Clin. Path. **1**: 391-398 (Sept.) 1931.

9. Minot, G. R., and Smith, L. W.: The Blood in Tetrachloroethane Poisoning, Arch. Int. Med. **28**: 687 (Dec.) 1921.

10. Takahashi, M.: Ueber das Stoffwechselverhältnis bei der Kohlenstofftetrachloride-Vergiftung, Jap. J. Exper. Med. **7**: 417-447 (Aug. 10) 1929.

Table 2 summarizes the physical examinations, giving the number of times one of the eight selected clinical studies fell outside the normal range. No worker was found to be seriously affected by the exposure to vapor. Among eight men working in concentrations averaging more than 100 parts per million, four showed no abnormal changes, two had restricted visual fields, and one had low calcium and one high urinary nitrogen. Among seventy-three working in concentrations averaging under 100 parts per million, thirty-eight gave no deviations from normal, eighteen high icteric indexes, twelve low blood calciums, five high van den Bergh reactions, seven restricted visual fields, and thirteen high lymphocytes or monocytes. A similar distribution was found among ten men working in unmeasured concentrations. None of the deviations from normal were marked. No man departed from normal in more than three out of the eight tests studied. Limitation of space prevents a more detailed presentation here.

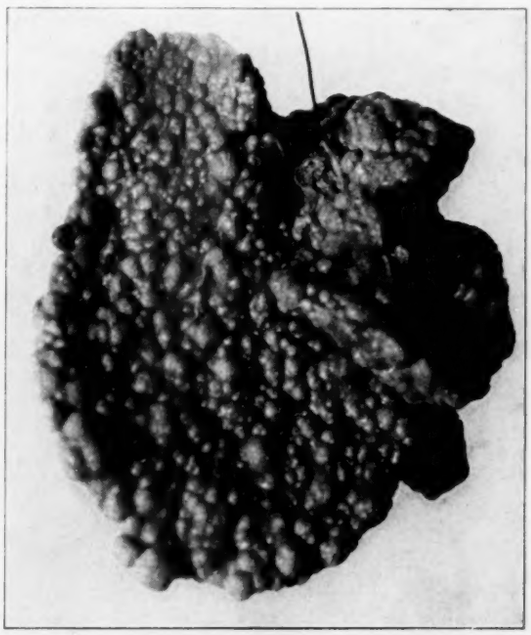

Fig. 1.—Liver of rat 377, showing advanced cirrhosis, color yellow; 119 exposures to 400 parts per million.

Men with histories of long exposure to carbon tetrachloride undoubtedly had developed resistance just as did experimental animals and actually showed fewer abnormalities than did men just starting work. No man considered materially or appreciably weakened by exposure was found, no pallor or jaundice, and only one large liver, in a man admitting that he was chronically addicted to alcohol. He has now been given another job in which there is no carbon tetrachloride exposure. The men uniformly reported that subjective symptoms (headache, nausea, dizziness, undue fatigue and the like) suggestive of toxic action were present only during brief periods of bad ventilation, machine cleaning, spills, or other intermittent high exposures.

Since it is impossible to state that any of the abnormalities are actually due to carbon tetrachloride, and since it is certain that past exposures of most of the men exceeded the measured present exposure, the data can give evidence only of the fact that none of the men were markedly affected by exposure. The data therefore cannot be used alone in fixing on a safe concentration, but, considered together with the animal results, it is believed that a valid answer is possible.

However, the table does give information as to the abnormal clinical data to be expected from men continuously exposed to low concentrations of carbon tetrachloride without being markedly affected. From this standpoint the four tests that would apparently give the most information about the condition of exposed workmen and would presumably detect injury at the earliest possible date by an increase between successive examinations would be the icteric index, blood calcium, van den Bergh reaction and visual field. Any progressive change in the values for these tests among men regularly examined should be regarded with suspicion.

CARE OF EXPOSED WORKMEN

The suggestions given by Davis [4] for selection of workers for carbon tetrachloride exposure are considered excellent. Animal work indicates that the addition of available calcium to the diet is of value in prophylaxis, and probably also in treatment.

It is desirable that physical examinations of exposed workers be carried out at least twice a year. These should include determination of the icteric index, blood calcium, van den Bergh reaction and visual field mapping, as well as an examination of the general health. Preferably they should include also white cell and differential counts.

The development of an abnormal value in one of the single tests mentioned should call for watchfulness and an early reexamination, preferably one month after the first. If two abnormal values should develop, the exposure should be lessened and the man should be examined again in a month. If three are found, the

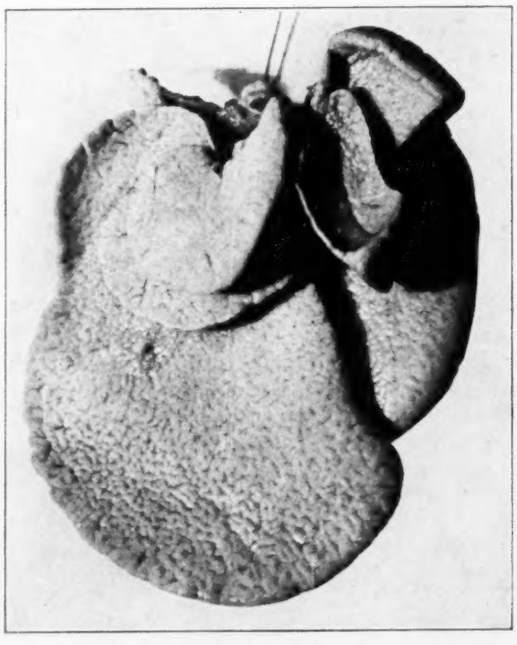

Fig. 2.—Liver of rat 395, showing regenerated cirrhosis, color normal; sixty-eight exposures to 400 parts per million, and 156 days without exposure; section resembles figure 3.

man should be moved to a department without carbon tetrachloride vapors. If at the end of a month in the new job his condition has returned to normal, his exposure may be resumed under a watchful eye. He may be found to be especially susceptible, in which case he should be given a permanent job without exposure to carbon tetrachloride. On the other hand, it is more likely that he will have developed an increased tolerance, the free period having sufficed for the development of regenerated, more resistant, parenchymatous cells.

COMMENT AND CONCLUSIONS

On the basis of animal experiments and on the assumption that monkeys resemble human beings most closely of the animals used and rats next most closely, it is concluded that 100 parts per million of carbon tetrachloride is a safe working concentration for con-

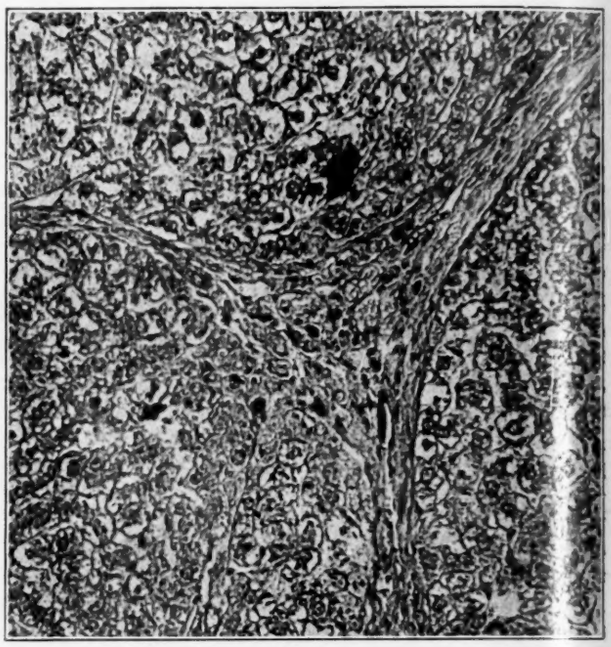

Fig. 3.—Liver of rat 393, showing regeneration from cirrhosis with contracted septums; magnification 250. Seventy-six exposures to 400 parts per million. Sixty-three days without exposure.

tinuous exposure of workmen during the working day. Intermittent exposures averaging 100 parts per million when the duration of exposure is taken into account also are safe, and concentrations considerably higher than 100 parts per million are safe for short periods. It is believed that 1,000 parts per million is a safe peak concentration for half an hour a day, with an average of 100 parts per million during the rest of the day. These limits refer to day after day exposure in industry.

One hundred parts per million of carbon tetrachloride is noticed by most people coming into the atmosphere from one free from carbon tetrachloride as a barely perceptible characteristic odor, and particularly sensitive noses will detect 50 parts per million. If the average nose recognizes more than a faint odor on entering the workroom, an increase in ventilation is called for.

This concentration of 100 parts per million agrees with the conclusions of Davis [4] and is in general agreement with McCord,[3] who considered on the basis of short exposures that the safe concentration lay below 500 parts per million.

An animal continuously exposed to small amounts of carbon tetrachloride soon regenerates originally damaged liver cells and somewhat later regenerates damaged kidney cells, the regenerated or entirely new cells being more resistant to the vapors than were the original cells. It is concluded from this that in most cases men continuously exposed to small concentrations of carbon tetrachloride increase their resistance rather than increasing their susceptibility. This contrasts strongly with the action of benzene, the safe con-

centration of which is also set at 100 parts per million, since with that solvent injury may be progressive even after exposure is stopped.

It is entirely possible and practical to use carbon tetrachloride for almost any purpose without exceeding a concentration of 100 parts per million. Standard dry cleaning machinery already on the market will keep the concentration much below this figure and can be maintained in condition without anything more than ordinary care. Other processes using carbon tetrachloride can be operated in a similarly safe manner if plant managers realize that it is necessary, without unduly increasing expense and in some cases with a saving of solvent.

Of the total of ninety-six men exposed to carbon tetrachloride in industry, tests showed no one who could be considered seriously or even unmistakably injured by the solvent vapors. Nineteen of these men had worked more than ten years with the solvent, one of them twenty-five years. Although no unmistakable clinical test has been found to determine whether or not a given worker is being injured by carbon tetrachloride before the injury has progressed, it is believed that the series of tests which are suggested will establish strong probabilities, and for this reason a program of physical examinations of exposed workmen is suggested. The following of this program would protect men from more than the first stages of carbon tetrachloride injury, and men detected in these first stages do not have a progressive condition and hence will return completely to normal when their exposure is stopped. In most cases such men will attain added resistance by regeneration of injured cells during a short rest from exposure, although occasional men probably will be found who cannot work with carbon tetrachloride at all.

University of Pennsylvania School of Medicine.

ABSTRACT OF DISCUSSION

DR. PAUL A. DAVIS, Akron, Ohio: The authors have concurred with my experience that 100 parts per million and less is a safe concentration to maintain when the worker spends from eight to ten hours daily in its presence and that carbon tetrachloride can be used safely in industry if proper ventilation is maintained to keep the concentration low. I have seen several cases in which the liver has been involved to such an extent that several months elapsed before the jaundice had disappeared. Cameron and Karunaratne in the *Journal of Pathology and Bacteriology* of Edinburgh have described carbon tetrachloride cirrhosis. The rubber industry in 1916, 1917 and 1918, during the war period when production was at a premium, used carbon tetrachloride indiscriminately in many kinds of mixtures, because it was cheap and an excellent solvent. Ventilation at that time was neglected and there was much sickness. Since that time ventilation has been improved, supervisors have been educated and a lot has been learned about the toxic properties of carbon tetrachloride and how to handle it. Carbon tetrachloride has been guilty in the past of causing considerable temporary disability, for even in nontoxic concentrations it will cause nausea and vomiting in many workers, which means a loss of time from work. Even though the concentration may be only 100 parts per million it nauseates some workers and they must be relieved from work. I have examined hundreds of these individuals without finding any clinical evidence of poisoning so far as laboratory tests are concerned, but nausea and vomiting are still present and I am inclined to believe that the peculiar odor of carbon tetrachloride is a hyperosmic stimulant. Negative laboratory tests for toxicity do not always insure a cure of the conditions complained of. The authors have mentioned a high calcium diet, which is a good suggestion. The industry with which I am associated has furnished milk for these workers and advised them to eat freely of vegetables at home. Female workers are more sensitive to the vapors and odors of carbon tetrachloride than the male. With the modern methods of ventilation, it is not at all difficult to keep these vapors and odors at a minimum, but carbon tetrachloride, being a noninflammable solvent, is used more freely and carelessly than other more dangerous solvents.

DR. W. F. VON OETTINGEN, Wilmington, Del.: I should like to ask the authors how many animals they used for each concentration and whether they have any explanation for the stimulating effect of 40 per cent concentrations on the growth. I wonder whether they have found any difference of higher concentrations on the reproduction of male and female animals, and whether younger animals are more or less susceptible than mature animals. I should like to ask them whether, in those slides which were taken from organs during the process of regeneration, they have seen differences in the shape of the regenerated cells that might parallel the reports by MacNider, who correlates these changes with the increased resistance of those animals to chloroform vapors.

DR. W. J. MCCONNELL, New York: I should like to ask Dr. Davis what his experience has been in the treatment of men acutely overcome with carbon tetrachloride. I have had reported recently three instances in one organization in which the intern who called for these patients administered epinephrine and all three immediately died. It appears as though the epinephrine is a sufficient stimulant or added stimulant to throw the heart into ventricular fibrillation. There is some evidence that when the heart is already in that condition the epinephrine has been found effective, but apparently in individuals in whom the heart is weak and the pulse irregular it is rather a hazardous type of treatment. I have recommended merely the inhalation of oxygen in those cases. I wonder whether he has had any experience in the treatment of those more acute cases.

DR. HENRY FIELD SMYTH, Philadelphia: I can answer some of Dr. von Oettingen's questions. We set out with the idea of taking twenty-four small animals in each group. Of course, some of these died from infections, but in every group we carried through the experiment in fifteen or sixteen animals. There were four monkeys in each group. As to the explanation of the fertility, and as to whether the effect on fertility involved males more than females, I do not know. Frankly, that was only incidental in the experiment. We kept a large control colony from the same group of rats, and that was our norm. They were fed the same as the other animals and were kept under the same conditions except that they were not put in exposure chambers. I realize that our observations are incomplete. An attempt was made to get all the animals of about the same age, the early adult rat, but pups were born during the experiment and they were somewhat more resistant; whether that was due to the fact that they were pups or to the fact that they had been born of parents under exposure, I am not prepared to say. As to regeneration cells, they were larger than the normal liver cells, with large spherical nuclei, uniformly granular, and in animals submitted to concentrations of 200 parts per million, in many acini these larger cells were recognized as regenerative, because one often sees pretty mitotic figures in them. When the organism was completely regenerated, after being exposed for several months, they practically came back to the normal, but the acini are smaller, with more connective tissue bands. We made recommendations following Dr. Davis's suggestions as to the selection of workers. We did not go any further because we thought his selections were excellent and were based on experience in industry.

DR. PAUL A. DAVIS, Akron, Ohio: The doctor asked a question of me concerning the use of epinephrine in carbon tetrachloride cases. If the case is acute and the patient unconscious, my treatment is to give intravenous calcium glutinate at once and then get a heart reading if possible. If the patient has a myocarditis, epinephrine should not be given. As to the definite procedure, one ought to know the heart condition before ever doing anything about it, and I think that if a man has reached the stage of narcosis from carbon tetrachloride, has an acute acidosis, and his heart muscles are in such a bad condition, one should not push them up by giving epinephrine. If he is not unconscious, plenty of fresh air should be given. Inhalations of oxygen with 2 per cent carbon dioxide after that is simply an after-treatment.

SECONDARY RESECTIONS IN RECURRING CARCINOMA OF THE COLON

J. W. THOMPSON, M.D.
ST. LOUIS

Carcinoma of the colon is a very common lesion, which occurs at all ages. In approximately 50 per cent of all cases encountered the disease has advanced beyond hope of surgical relief. There is an operative mortality varying from 5 to 35 per cent. Frequently the recovery of the patient is stormy, and in lesions of the rectum and lower part of the colon there is all too often the mutilation and social isolation associated with permanent colostomy. In growths more proximally situated, the problem of colostomy is avoided but the frequency of recurrence is greater. Metastasis to the liver and to regional lymphatic channels is always a specter which haunts the lives of those individuals fortunate enough to survive operation. The outlook for a patient proved to have even an operable carcinoma of the colon is, to say the most, not greatly encouraging.

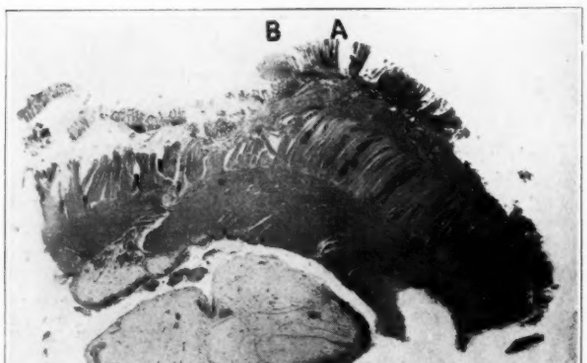

Fig. 1 (case 1).—Microscopic section of first tumor. Edge of primary circumscribed ulcerating carcinoma arising in the mucosa of the pelvic colon with early extension of malignant glands into the submucosa and partly through the muscle coats. The mucosa shows a sudden change (*A*) from hypertrophic colon mucosa (*B*) to well differentiated carcinoma. There are a very few malignant glands beneath the peritoneum of the mass of fat tissue under the serosa (*C*). This tumor was excised wide of the section shown.

This statement is true despite the tremendous amount of propaganda put forth in an attempt to get earlier diagnoses of abdominal or other malignant conditions.

The surgeon who frequently operates for cancer of the colon is always hopeful that his ministrations have been successful, but in many instances recurrence takes place so soon after operation that the difficulty of complete removal of the primary growth is a distinct challenge to the advisability of any attempt to eradicate the disease. The attitude of mind of many practitioners when confronted with a patient in whom a definite diagnosis of a gastro-intestinal malignant growth is made is frequently one of complete hopelessness. Because of this attitude it is difficult to persuade patients to be operated on. The problem is even more difficult when one is faced with the frank presence of recurrence. It is my opinion that in lesions of the colon in which there is not definite evidence of metastasis in the liver, recurrence in or about the site of previous operative intervention should not deter one from reexploration with a second attempt at removal of the neoplasm. Such cases are admittedly few and are so rare that, when encountered, they should be reported in order to combat the tendency to futile surrender when faced with the possibility of a recurrent carcinoma in a patient otherwise in good or fair general physical state. It is my purpose in this paper to present a small series of such cases in which a second resection of the large bowel has been successfully performed for recurrence of malignant lesions.

Subsequent to apparently complete removal of a colonic lesion the growth may recur at the line of anastomosis, in the operative incision or in the regional lymph nodes, or it may appear in distant organs as the result of metastatic emboli. Recurrence by implantation from abdominal tumors, especially in the exteriorization type of procedure, is a well recognized hazard. The return of many malignant tumors usually is prompt and local, but many years may elapse between the primary removal and the appearance of a recurrence. This phenomenon is more striking in other organs than the gastro-intestinal tract. Thus Ewing [1] records cases wherein thirty years elapsed between primary operation and recurrence in breast cancer, twenty-one years in rectal cancer, and fifteen years in uterine cancer. He quotes Gross as having performed twenty-two operations in fifty-four recurrent tumors in a case of sarcoma of the breast during four years, the patient finally recovering. Thus ample precedent has been established in suggesting that renewed attempts be made completely to extirpate growths which have a tendency to return in a localized area of the large bowel.

Recurrent tumors in the great majority of cases arise from cells or portions of the tumor that have escaped removal. Microscopic section of specimens removed at operation reveal that the knife has passed through strands of tumor tissue or vessels containing tumor cells. For this reason it has always been the practice of abdominal surgeons in performing resections of the intestinal tract to remove a wide portion of normal appearing bowel above and below the primary growth. Serial sections of the normal appearing bowel wall will frequently show that there are strands of cells left behind, and with the abdomen sewed up and the patient returned to the room there is little to do except wait for the possibility and almost certainty of recurrence. Arising from remnants of the original growth recurrence is usually prompt, multiple, in the line of incision or nearby, and of the same type as the original growth, or more malignant. Yet there are many cases which remain dormant for years, and there is always the possibility that the defensive forces of the body will isolate and destroy the few remaining cells by enveloping them in a wall of fibrous tissue proliferation. According to Ewing:

> The many instances in which partial removal of malignant tumors has been followed by regression of the remnant, as in ovarian carcinoma and in chorioma, indicate that the mechanical disturbance of nutrition, or removal of local sources of growth stimulus, or the general relief of the organism from toxic products, turn the balance in favor of the patient, and lead to absorption of the tumor cells. Thus tumors in rats sometimes regress after hemorrhagic infiltration following

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

The author is indebted to Dr. H. W. Soper for access to his case records, to Dr. E. V. M. Mastin for his permission to include case 3 in the series herein reported, and to Dr. Walter J. Siebert, pathologist of DePaul Hospital, for his careful study of the tissues microscopically and for helpful suggestions.

1. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1927, chapter 4.

crushing trauma. The same factors may be assumed to retard the growth in more malignant tumors which spring up at varying periods after incomplete removal.

In one of the cases presented in this series the original removal of the primary growth seemed quite adequate, and after reoperation for recurrence, had the abdomen not borne the scars of previous operations, the growth present at the secondary session could easily have been deemed the primary one. There was no evidence of metastasis to the regional lymph nodes, the adjacent peritoneal surfaces or the distant viscera, particularly the liver. This unusual finding prompted a review of the literature on recurrence of colonic malignant growths and led to the question as to whether or not the second growth might not be an entirely new and independent one. Could it have been that there was in this patient's organism some stimulus which provoked the development of the second growth in the same manner and in the same site in which the first tumor developed? The specimen removed at the first operation was sectioned serially above and below the growth and no microscopic evidence of incomplete removal was seen. The layers of the intestinal wall appeared to be entirely normal. There was at one place an extension of the growth through the intestinal wall to the peritoneal covering immediately below the growth but this had been removed in toto with the growth and a wide wedge-shaped piece of the mesentery. Consequently one was impressed with the appearance of the second growth, which was freely movable, entirely without attachment to the adjacent peritoneum or evidence in the gross lymph nodular involvement. It appeared to be a "brand new tumor." The remainder of the abdominal viscera and lymphatics appeared to be free from involvement.

Ewing,[1] in discussing the problem of recurrence, states the possibility of a tumor exerting a pervasive formative influence, leaving the surrounding tissues in a state of excitation with a momentum toward neoplastic growth, so that after removal of a tumor the adjacent tissues give origin to a new tumor. This somewhat vague conception is vigorously opposed by other authorities and cannot be reconciled with the theory of the origin of carcinoma from isolated cell groups. Yet there are considerations that render it inadvisable to discard such a theory of recurrences. This question is closely related to that of the influence of tumor growth on surrounding tissues and to that of the multiple origin of tumors of the same organ. Attention has been called to the fact that some tumors advance by gradual lateral extension over previously normal cells, so that removal at one stage of this extension may leave cells which later reveal their momentum toward tumor growth. The local predisposition to tumor growth may extend over a considerable area, in all of which a neoplasm does not reveal itself at once but develops in several stages or foci. Such conditions are clearly revealed in neurofibromas, and, according to Hauser,[2] with various carcinomas, especially those of the gastro-intestinal tract.

It is well known that tumors of various organs, including the colon, may be multiple. Combinations of multiplicity in the different systems as well as in individual organs or viscera are likewise noted. Warren and Gates,[3] in an exhaustive review of the literature of multiple primary malignant lesions in the year 1932, collected from the literature 1,259 cases which were identified with accuracy. They conclude that the frequency of multiple malignancy is 1.84 per cent of cancer cases. Multiple cancers occur at approximately the same age as single cancers. Multiple malignant tumors occur more frequently than can be explained on the basis of chance. This may be explained by a predisposition or susceptibility to cancer in certain persons, or the action of some factor or stimulus favoring the development of a malignant growth. The nature of this predisposition is as yet unknown and in the limited space available for this presentation cannot be adequately discussed. Those interested in pursuing the subject further are referred to the excellent article by the aforementioned authors.

The question of whether or not the lesions are true recurrences or new primary growths need not overshadow the practical importance in the clinical field of judicious attempts to relieve the patient of his disease. The general attitude of hopelessness expressed by many practitioners when confronted with patients who have manifestations of recurrence should be combated. There is nothing to be gained by telling the patient that,

Fig. 2 (case 1).—Microscopic section of second cancer. "Recurrence" at the site of the anastomosis following the wide resection of the cancer. *A* shows a small mass of cancer cells in the serosa, which may be a possible source of the recurrent tumor. This tumor, however, shows many characteristics of a primary carcinoma. It appears to commence in the mucosa and to extend through the submucosa into the muscularis. There was no evidence of lymph node involvement in the widely excised tissue. The involvement of the serosa is limited strictly to the area shown here.

because the lesion has apparently returned, his cause is lost and he must immediately prepare for the inevitable. Provided there is no definite evidence of hopeless metastasis in the lungs or in the liver, recurring symptoms of obstruction or of blood in the stools, either in gross amounts or determinable by the guaiac test, should suggest reexploration of the patient's abdomen and examination for the possibility of further resection or palliation rather than immediate and definite condemnation to a certain slow and extremely obnoxious manner of death. It is with the hope of encouraging others to adopt a positive instead of a negative attitude toward such cases that this paper is presented.

In spite of the fact that the literature on multiple malignant lesions is rather extensive, as a perusal of the review by Warren and Gates will reveal, there is little or no mention of the surgical removal of recurrent lesions, although multiple lesions of the bowel have been noted and frequently removed. Bargen and Rankin[4] in 1930 reported a series of sixteen cases of multiple carcinomas of the large intestine, but in none of these

2. Hauser, V. A.: Das Cylinderepithel des Magens und des Darms, Jena, 1890.

3. Warren, Shields, and Gates, Olive: Multiple Primary Malignant Tumors, Am. J. Cancer **16**: 1358-1409 (Nov.) 1932.

4. Bargen, J. A., and Rankin, F. W.: Multiple Carcinomata of the Large Intestine, Ann. Surg. **91**: 583-593 (April) 1930.

was there mentioned the problem of local recurrence versus multiplicity. Rankin [5] informs me that he has attempted secondary removal in some cases and quotes Judd as having made similar attempts, with little success. This is to be expected but should not lead to absolute denial of any possible chance of further relief or palliation to be obtained by secondary procedures.

Before multiple carcinomas can be classified as separate and distinct lesions, Billroth's postulates have to be considered: (1) The two growths must show distinct histologic differences, which must be so pronounced as to exclude the possibility that they are of the same origin but in different stages of development, (2) each growth must spring from its parent epithelium, and (3) each growth must be held responsible for its own group of metastatic growth. Mercanton [6] added to these postulates the following qualification: "If after removal of two carcinomas the patient remains free from disease, the two growths must have been independent else there should have been other metastasis." It is evident that in carcinomas arising from the intestinal epithelium the first of Billroth's postulates cannot well be fulfilled. Moreover, since carcinomatous degeneration of multiple intestinal polypi is entirely likely, it seems that this postulate need not be fulfilled in identifying multiple independent carcinomas of the intestine. Thus it may be postulated that growths which return at the site of operation, no matter what the intervening length of time, may be open to the question of difference between true recurrence or of a new independent primary tumor actuated by the identical stimuli that produced the first one. The latter hypothesis would seem to hold wherein the second growth had all the gross and microscopic characteristics of an independent neoplasm. Such was apparently the fact in case 1. In those instances in which the secondary or multiple growth occurred at a point distant from the original lesion after a lapse of many years, such tumors must reasonably be classified as new and independent lesions.

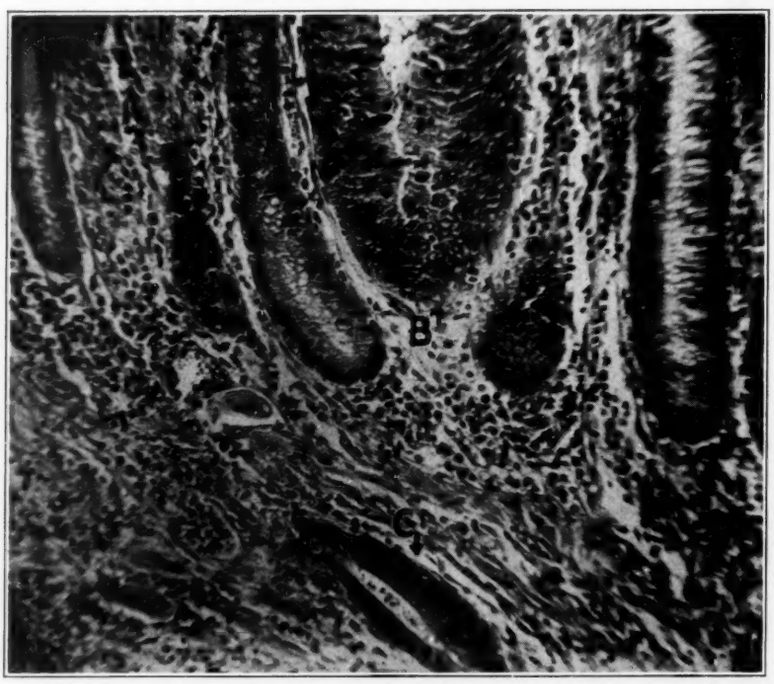

Fig. 3 (case 1).—Section of mucosa shown in figure 2 under high power. "Transition" of hypertrophic colon glands into malignant glands in the "recurrent" carcinoma. Note the piling up of epithelium, the atypical arrangement of the cells and the hyperchromatic nuclei in gland *B*. There are several mitotic figures among these cells. Gland *C* represents a malignant gland that has penetrated into the submucosa.

There have been but few such cases reported in surgical literature. Klingenstein [7] reported a case in which partial colectomy for carcinoma of the transverse colon was done in 1920, of the sigmoid in 1926, and of the ascending colon in 1934. Pfeiffer,[8] in discussing this case, stated that such an instance of successive independent carcinoma of the bowel was unique in his personal experience. Bargen and Rankin [9] have reported a case of three successive carcinomas of the colon followed by sarcoma of the uterus. Dowden [10] relates a case of carcinoma of the pelvic colon which he resected, followed in three years by recurrence in the rectum, for which colostomy was done. Subsequently in one year there was a malignant stricture of the small intestine, which he resected. This patient died six years after the first operation from recurrence at the colostomy opening. Lilienthal [11] wrote of "cancer tendency" in reporting a case of carcinoma of the colon occurring in a patient nearly twenty years after extirpation of a similar tumor. Other than these brief reports of cases recurring after a lapse of years there has been no extensive series reported in the literature, and it is hoped that this report will result in the compilation of those in which operation has been performed so that more light may be thrown on the advisability of reoperation in such cases.

REPORT OF CASES

CASE 1.—W. J. K., a man, aged 51, was brought into the DePaul Hospital Dec. 30, 1935, in an acutely ill condition. He stated that in the first part of November 1931 he had noted for the first time that the bowels were constipated. On the advice of neighbors and through reading advertisements, coupled with suggestions heard over the radio, he had taken coarse cereals such as bran flakes to give more roughage in the bowel. He had little success with this and found it necessary to take an occasional dose of epsom salt to secure adequate elimination. The constipation became gradually worse, yet he persisted with the roughage and bran until the abdomen became swollen and distended with gas. He was nauseated and vomited; there was absolutely no bowel movement or passage of flatus for a period of forty-eight hours prior to his admission to the hospital. On examination he was in generally good physical condition. The blood pressure was 130 systolic, 80 diastolic. The urine was normal. The erythrocytes numbered 4,500,000 per cubic millimeter. Hemoglobin was 85 per cent Sahli. The Kline reaction was negative. A plain roentgenogram of the abdomen revealed an enormously distended large intestine with some distention of the small intestinal coils. The cecum could be outlined as a greatly distended pocket of gas. A diagnosis of obstructive lesion of the large intestine was made and immediate cecostomy was advised. The patient was prepared with intravenous infusion of saline solution.

Operation was performed December 30, under 200 mg. of procaine crystals dissolved in 3 cc. of spinal fluid. The incision

5. Rankin, F. W.: Personal communication to the author.
6. Mercanton, F.: Rev. méd. de la Suisse Rom. **13**: 173 and 229, 1893.
7. Klingenstein, Percy: Multiple Carcinomata of the Colon, Ann. Surg. **102**: 1079-1084 (Dec.) 1935.
8. Pfeiffer, D. B., in discussion on Klingenstein.[7]
9. Bargen, J. A., and Rankin, F. W.: Ann. Surg. **91**: 589 (April) 1930, case vi.
10. Dowden, J. W.: Carcinoma of Pelvic Colon: Resection Three Years Later, Recurrence in Rectum: Colostomy One Year Later, Carcinomatous Stricture, Small Intestine: Resection, Carcinoma at Colostomy Opening: Death Six Years After First Operation, Edinburgh M. J. **19**: 181-183 (Sept.) 1917.
11. Lilienthal, Howard: "Cancer Tendency" in Large Intestine: Carcinoma of Colon: A Case Occurring Nearly Twenty Years After Extirpation of a Similar Tumor, M. Times **43**: 223, 1915.

was made in the lower right quadrant and the cecum presented itself distended to the size of a football. The gas was permitted to escape by puncturing the cecal wall with a needle and then a cecostomy was made, a number 24 colon tube being inserted in the bowel after the method of Witzel. The colon tube was brought out through a small stab incision lateral to the main incision, which was closed in anatomic layers without drainage.

The patient's subsequent course was quite satisfactory. Irrigation of the cecostomy opening with copious quantities of water brought forth large amounts of bran that had been impacted along the bowel all the way down to the pelvic colon, which proved to be the site of the obstruction as determined by subsequent examination with the barium sulfate enema. When the bowel had been thoroughly cleansed and had resumed its normal caliber and tonus, resection of the growth was elected. Operation was done Jan. 14, 1932, again under spinal anesthesia. The growth was annular and constricting in type, situated in the pelvic colon. There was no evidence of metastasis in the liver or grossly in the regional lymphatics. A segment of colon approximately 6 or 7 inches (15 or 18 cm.) was resected, a wide margin of normal appearing and normal feeling intestine being taken above and below the growth. Because the bowel was somewhat redundant, this was easily accomplished. A wedge-shaped piece of mesentery including the regional lymph nodes was included and removed in one piece in toto. An end-to-end anastomosis was performed, Dulox catgut reinforced with silk being used. The abdomen was closed in layers. The cecostomy tube was permitted to remain for purposes of decompression. The patient made an uneventful recovery; the wound healed by first intention and the cecostomy tube was removed on the sixth day after he had several normal bowel movements. The rectal fistula soon healed and the patient was dismissed from the hospital in good condition on the thirtieth day following his initial admission.

His subsequent course was quite interesting. A barium sulfate enema, March 30, showed a normal appearance with smooth adequately calibered bowel at the juncture of the iliac and pelvic colon. The man had gained in weight, resumed his occupation and considered himself well. In October 1934, twenty-two months after his operation, he returned with symptoms of constipation similar to those he experienced prior to his initial illness. Proctoscopic examination showed nothing abnormal. A barium sulfate enema, however, disclosed evidence of obstruction at the juncture of the iliac and pelvic colon with a filling defect and palpable mass. The manifestations were considered to be characteristic of carcinoma and immediate reoperation was advised and accepted. Routine examination of the blood and urine showed them to be normal. The man weighed 177 pounds (80 Kg.) and appeared to be in the best of health.

Secondary operation, October 15, through a left rectus incision, again with spinal anesthesia, revealed a napkin-ring type of growth identical in appearance with the one previously encountered. After mobilization of the tumor it was possible to resect it with approximately 2 inches (5 cm.) of normal mucous membrane on either side of the malignant stricture, a segment of bowel being resected again about 5 or 6 inches (13 or 15 cm.) in length. An end-to-end anastomosis was made and all raw surface was peritonealized. A segment of the mesentery was again removed. Careful preliminary exploration of the abdomen did not reveal any sign of metastasis in the liver or any peritoneal surface. A cecostomy was not deemed necessary. The incision was closed in layers, a small Penrose cigaret drain being left down to the suture line lateral to the intestinal wall.

The patient again had an uneventful convalescence. He has remained well to date, and repeated examinations of the stool for occult blood and examination of the bowel by barium sulfate enemas have failed to disclose any further evidence of recurrence (figs. 1, 2 and 3).

CASE 2.—C. K., a man, aged 54, came to the attention of Dr. H. W. Soper in July 1917. His chief complaints at that time were diarrhea, loss of weight, tenesmus, and mucus in the stools. In his youth he had contracted a hard chancre, for which vigorous treatment had been given. On physical examination he appeared anemic and acutely ill. The erythrocyte count was 3,250,000 and the hemoglobin (Sahli) was 35 per cent. There was a palpable mass in the right lower quadrant. A barium sulfate enema revealed a filling defect at the cecum. Endamoeba histolytica was found in the stools. A diagnosis of carcinoma of the cecum and amebic dysentery was made and he was referred to the Mayo Clinic for surgical treatment. October 9, Dr. W. J. Mayo removed the cecum, ascending colon and terminal ileum. The lesion was described as an adenocarcinoma of the cecum and ascending colon with involvement of the regional lymph nodes, which were removed. Because of this a poor prognosis was given.

During the intervening years between 1917 and 1930 the patient had been observed at frequent periods by Dr. R. W. Mills, who checked the colon for recurrence by means of barium sulfate enemas. They were consistently negative. After the death of Dr. Mills in 1924 the man did not return as frequently as formerly but considered himself quite well.

In the fall of 1929, at the age of 68, because of bleeding from the large bowel, he was subjected elsewhere to hemorrhoidectomy. Immediate recurrence of notable bright red bleeding in the stools following this procedure led him to consult Dr. Soper for determination of the source of the hemorrhage. Examination of the patient at this time showed him to be in remarkably good general condition. There were 4.75 million erythrocytes per cubic millimeter in the blood, and hemoglobin (Sahli) 85 per cent. Occult blood was present in the stools

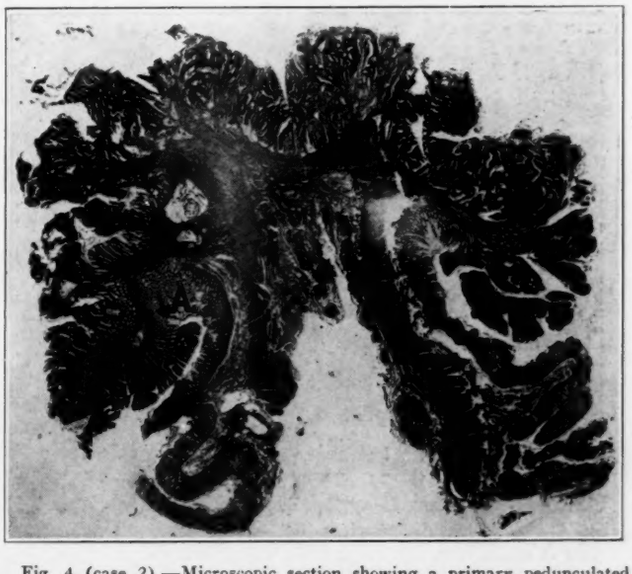

Fig. 4 (case 2).—Microscopic section showing a primary pedunculated papillary adenocarcinoma arising in the transverse colon thirteen years after the removal of an ulcerating adenocarcinoma of the cecum with lymph node involvement. This tumor shows an abrupt transition of hypertrophic into neoplastic epithelium, *A*. The carcinoma begins in the mucosa and extends deeply into the submucosa and to a less degree into the muscularis. This is distinctly a primary carcinoma. Examination of the colon at both operations failed to reveal the presence of polyps.

(guaiac test). A barium sulfate enema revealed a small filling defect in the transverse colon just distal to the splenic flexure. A diagnosis of carcinoma of the transverse colon was made and the patient was advised to submit to immediate operation.

Operation (J. W. T.) was performed Jan. 28, 1930, at St. Luke's Hospital under spinal anesthesia induced by 200 mg. of procaine crystals. An upper left rectus incision was made and the liver first explored for metastases. None were found. The peritoneal surfaces were likewise free. The site of the previous resection (done in 1917) was quite free from adhesions. In the distal transverse colon a carcinoma the size of a dollar (38 mm.) was found. The wall of the bowel was free from extension to the peritoneal surface. The segment of bowel containing the carcinoma was freed, together with a fan-shaped wedge of mesentery and the freed loop of intestine fixed in Rankin's clamp and the involved segment of intestine severed with the actual electric cautery. The ends of the intestine were reunited in the aseptic manner described by Rankin by suturing the intestinal walls together with Dulox catgut over the clamp. The line of anastomosis was further protected by reinforcement with silk sutures, and additional protection was supplied by placing adjacent fat along the suture line fixed by interrupted silk sutures. The rent in the mesentery was

repaired and the abdomen was closed in layers without drainage. The postoperative course of the patient was uneventful, with the exception of a slight superficial wound infection.

The patient's subsequent course has been quite satisfactory. Repeated examinations of the stools for occult blood have always proved negative. The barium sulfate enema test shows that there is perfect canalization of the lumen of the colon with a good smooth contour of the colonic wall at the site of anastomosis, with the caliber of the lumen the same size as that of the rest of the intestine in the transverse colon. During the interim the patient has lived a useful life and was forced to retire from his occupation owing to the development of coronary sclerosis with symptoms of angina pectoris. He was still living in a fair degree of comfort in 1936 at the age of 75.

CASE 3.—M. B., a man, aged 36, came to the attention of Drs. Soper and Mills in 1918. He complained of pain in the midepigastrium radiating in all directions. The pain came on after eating and lasted for about fifteen minutes, cramplike in character. The bowels had been constipated. His weight was 137 pounds (62 Kg.), a loss of nearly 20 pounds (9 Kg.). These symptoms had been progressing for approximately one year. There had been no blood noted in the stools. Examination of the urine was negative. The erythrocyte count was 4,000,000. Hemoglobin (Sahli) was 60 per cent and the Wassermann reaction was negative. Gastro-intestinal x-ray examination by Dr. Mills revealed a filling defect in the proximal transverse colon.

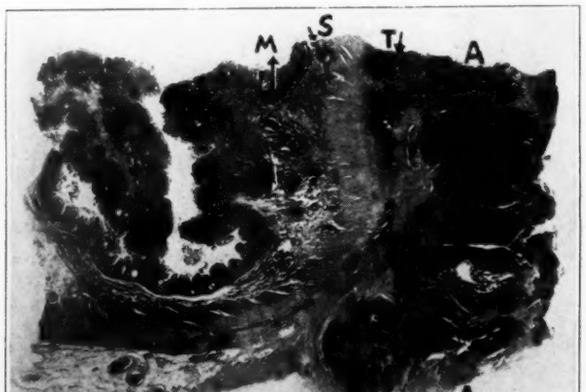

Fig. 5 (case 3).—A "true" recurrence of a poorly differentiated carcinoma of the colon in which a large cancerous mass (*A*) remained behind in the serosa after an incomplete resection nine years previously. The tumor has extended from the serosa, through the muscularis into the submucosa, and finally into the otherwise normal mucosa. The dark areas (*M*) are masses of cancer cells that have invaded the base of the otherwise normal mucosa. *S* shows similar masses in the submucosa and *T* shows masses that have invaded the muscularis. The invasion of the muscularis is considerably more extensive than in the submucosa. The longitudinal muscle layer is almost completely destroyed by the cancer.

The first operation, Nov. 20, 1918, at St. Luke's Hospital by Dr. H. G. Mudd, through a right rectus incision revealed a large tumor of the transverse colon. The lesion was annular, surrounding the entire intestine and attached slightly to the gallbladder. The intestine was freed from its mesentery for 3 inches (7.5 cm.) above and below the lesion, which was then severed between clamps with the actual cautery. The ends of the bowel were turned in and a lateral anastomosis was made. There was no evident lymph node involvement. Two nodes were removed and proved to be simple hyperplasia of inflammation. The lesion itself was an adenocarcinoma (sections of tissue not available).

The patient remained well and resumed his work as a pedler. He returned for examination from time to time and in February 1927 a small mass was found in the right upper quadrant. His weight then was 147 pounds (66.7 Kg.) and his general condition good. The erythrocytes were 4,000,000 and the hemoglobin (Sahli) was 78 per cent. There was a four plus guaiac test for occult blood in the stools. Gastro-intestinal x-ray examination revealed a carcinomatous filling defect in the distal ascending colon, the lesion appearing to be on the proximal side of the anastomosis made in 1918. The urine was normal and the Wassermann reaction was again negative. Surgical exploration was recommended.

At a secondary operation, March 15, 1927, at St. Luke's Hospital the abdomen was opened to the left of the old scar. There was a large mass in the region of the ascending colon, adherent to the liver, abdominal wall, gallbladder, duodenum and head of the pancreas. The gallbladder contained stones. After careful dissection of the adhesions the mass was mobilized and the ascending colon and a portion of the transverse colon were resected together with the terminal ileum, cecum and appendix. As many as possible of the regional lymph nodes were removed. The continuity was added, a 20 French catheter being placed into the terminal ileum. A piece of omentum was used to protect the anastomosis. One Penrose drain was left in the upper angle of the wound, which was closed in layers around the drain.

The patient made an uneventful recovery from this procedure after overcoming the usual postoperative hazards of shock and wound infection but encountered difficulties in October 1927, when he suffered an attack of acute small intestine obstruction, which made it necessary to reopen the abdomen to relieve the obstruction produced by an adhesion band. Following this procedure he has remained well, and when last heard from in 1936 he was in good general condition.

COMMENT

These three patients present entirely different phases of the clinical problem under discussion. There was no doubt about the second diagnosis of recurrence in case 1, or possibly a new primary carcinoma similar to the initial lesion. In case 2 one cannot regard the lesion of the transverse colon occurring thirteen years after the resection of the right half of the colon as a true recurrence. This growth should be classified as a new primary carcinoma of the bowel (fig. 4). Case 3 is undoubtedly an example of true recurrence. The fact that these three patients survived secondary resections of the colon and have led useful lives subsequently should encourage one to make some effort to remove recurring or multiple growths from the colon instead of assuming an attitude of utter hopelesslessness when faced with such situations. One is not always rewarded with such success, for in two other personal cases in which symptoms of weight loss, occult blood in the stools, and demonstrable filling defect in the colon led to reexploration of the abdomen, hopeless metastasis in the liver defeated the attempts to forestall the inevitable. Such experiences should not, however, deter one from making the attempt in every case in which the general condition of the patient justifies it.

SUMMARY AND CONCLUSIONS

1. Recurring carcinoma of the colon is not invariably a hopeless lesion and should not be prognosticated as such.

2. Multiple malignant lesions of the colon are probably not as rare as commonly believed. They may occur simultaneously or develop after a period of many years.

3. A more positive attitude of mind in the diagnosis and surgical management of malignant lesions of the gastro-intestinal tract should be encouraged to afford earlier recognition of primary lesions and to lend hope for possible surgical cure or further palliation for secondary neoplasms.

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ABSTRACT OF DISCUSSION

DR. CLAUDE J. HUNT, Kansas City, Mo.: Two points stand out in this presentation worthy of emphasis: first, the importance of early operation in primary or secondary malignant lesions of the colon; second, that more than one carcinoma may exist simultaneously or at widely separated periods of time in the colon, which are separate and distinct and have no relation to one another. Early operation on a primary or secondary

growth offers two distinct advantages to the patient: the opportunity of successful removal of the lesion, as was accomplished in these cases, and the alternative of sometimes anastomosing around an inoperable mass, thereby detouring the fecal current and limiting to a minimum subsequent infection and hemorrhage and eliminating a later colostomy with its disagreeable features. Infection, hemorrhage and secondary anemia contribute much to the discomfort of the patient and hasten the progress of the disease; thus, with a detoured fecal current patients live much longer and are more comfortable, and obstruction is less likely. I cannot fail to speak of the merits of an anastomosis of this nature as a palliative operation worthy of great consideration. By such a procedure some indurated inflammatory masses may recede and subsequently become operable. The cases in this presentation are most probably secondary independent growths. Primary recurrence would have manifested itself by local recurrence at or near the site of the original bowel lesion and would have shown extensive local metastasis as well as binding down of the bowel at the primary site of extensive adhesions and contractures. My experience with recurrent carcinomas of the large bowel has been that they are decidedly inoperable, owing to local extension and to visceral and glandular metastasis. I have done an anastomosis around the inoperable mass when possible. When obstruction was present or the location of the lesion prevented anastomosis, colostomy was performed. Considering these as secondary lesions, one must speculate on the possible causative factor of multiple carcinoma of the colon. It is not likely that carcinoma develops on normal colonic mucosa but that some abnormal benign lesion, as adenomas or polypi, plays a part in their development. These benign lesions are known to be commonly distributed along the colonic mucosa. Bardenhauer and others first spoke of the malignant change in adenomatous cells, and Rankin and Fitzgibbon demonstrated that certain colonic polypi had a tendency to undergo malignant change. Many such cases are on record. Billroth's postulates as to secondary malignant lesions are interesting but hardly tenable for colonic carcinoma.

DR. F. F. DIXON, Rochester, Minn.: Dr. Thompson's presentation interests me. His material is worthy of being made a matter of record, as it emphasizes that the development of a malignant process at the site of a former operation for neoplastic growth does not necessarily indicate that the patient is doomed. Whether such a lesion is a recurrence or another primary growth is a matter of conjecture. It is my opinion that, if a patient has no sign of local recurrence of the disease for two or three years, any malignant tumor that develops subsequently should be considered to be an independent process. However, it has been shown that rests of malignant cells may remain more or less dormant for a number of years. The problem of particular interest in this discussion concerns the feasibility of subsequent resection because of carcinoma of the bowel. If there is no evidence of metastasis to the liver and the patient's condition is "fair" or "good," I feel that an attempt should be made to remove the malignant process by resecting the intestine. When there is doubt about the condition of the liver, the functional tests will be of great value in reaching a correct decision, since there would certainly be an appreciable impairment of the function of the liver in most cases in which marked metastasis to the liver has occurred. My feeling regarding the justification of subsequent resection of the intestine for carcinoma is substantiated by the results obtained in eight cases in which the patients' lives were extended for years by multiple operations in which segments of the colon were removed. Two patients had several resections of the bowel and lived about two and nine years respectively, after the last operation, but in neither case was death due to a malignant process. I agree with Dr. Rankin and Dr. Hunt that rehabilitation of the patient before operation is of inestimable value; however, I do not subscribe to Dr. Rankin's present idea that preoperative vaccination is of no value, nor do I concur in his opinion that the administration of vaccine is a dangerous procedure. At the clinic we have employed intraperitoneal vaccination as a measure for the prevention of peritonitis in more than 3,000 instances, and since its use the death rate from peritonitis has decreased appreciably. As closely as we are able to estimate, we now lose one patient from peritonitis where formerly three succumbed to it. Of course the technic in carrying out any surgical procedure is important, but I am certain that my surgical technic is no better than that of those of the same institution who have gone before me; nevertheless, the mortality has been greatly reduced. It would hardly seem fair to say that intraperitoneal vaccination is dangerous, since in 3,000 or more instances there has not been a single death that could be attributed to that procedure.

THE TREATMENT OF PRIMARY MALIGNANT CHANGES OF THE BONE

BY RADICAL RESECTION WITH BONE GRAFT REPLACEMENT

FRED H. ALBEE, M.D.
NEW YORK

The treatment of malignant growths of the bone, especially primary bone sarcoma, is still desperately unsatisfactory, despite strenuous efforts to its improvement. Most radical amputations, preceded and followed by x-ray and radium therapy, are able to secure lasting results in only a small number of cases. Metastases in the lungs may develop within a longer or shorter time after the amputation, quite often without involvement of the regional lymph nodes.

The uncertainty of the outcome in these radical and crippling operations, the severe psychic trauma that they usually represent for the patient, the difficulty of applying an artificial limb after exarticulation in the hip joint, all have led to less radical surgical procedures, if possible, applied earlier, which, still aiming at eradication of the malignant tumor, are an attempt to save the extremity in its usefulness.

I do not claim any miracles. I think that the therapeutic problem of malignant growths of the bone is still unsolved. Time and greater clinical material will have to show whether my method is definitely superior to any other actually in use, but from a relatively small number of cases I obtained the certain impression that it can compare quite favorably with the surgical routine treatment and was so decidedly advantageous in some of the cases that its value cannot be underestimated. The method consists of a radical resection of the tumor followed by a plastic bone graft replacement operation. I am presenting here briefly thirteen cases of malignant growths of the bone. Three involved the shoulder region, seven the lower end of the femur and three the shaft and lower end of the tibia.

SHOULDER REGION (THREE CASES)

The following case has been reported in a previous article (1921) in which special emphasis was put on the operative technic of restoration of shoulder joint function. The case is presented again here with a follow up of almost seventeen years.

CASE 1.—A woman, aged 25, complained of constant pain in the left shoulder, especially at night, and reported a slight loss of weight. The roentgenogram revealed a destructive lesion in the upper third of the shaft of the humerus with expansion into the soft tissues. The clinical and x-ray diagnosis of osteosarcoma was made and later on confirmed and specified histologically as osteosarcoma with malignant activity. Surgical removal was decided on and performed.

The operation consisted in the resection of the head and 5 inches (12.5 cm.) of the upper end of the shaft with replacement by a long piece of the fibula. More in detail, the opera-

Read before the Section on Orthopedic Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

tive procedure was as follows: The patient was placed on the Albee table and traction was applied to the left arm, which was kept in the same position throughout the entire operation. The tumor was exposed and a frozen section made. The soft parts were separated from the bone by blunt and sharp dissection, care being taken to keep well outside the area of the new growth. The shaft was completely severed by means of a Gigli saw, about 4½ inches (11 cm.) from the upper extremity of the humerus, well below the tumor. After removal of the upper fragment, the upper end of the humeral shaft was prepared for the reception of the fibula transplant. The marrow cavity was slightly enlarged and by means of the twin saw a groove was cut in the shaft for about one-half inch (1.3 cm.). The upper end of the fibula was then removed through a posterior incision (because the fibula can be exposed much more easily from behind and the peroneal nerve can be brought better in safety). With the Gigli saw a piece of the fibula was removed so as to exceed the length of the removed humeral fragment for about 1 inch. The angular projections on the surface of the fibula shaft were roughly trimmed down with the motor saw, and the diameter of the shaft was thus made slightly smaller at the lower end so that it might be easily inserted into the humeral shaft. Then the fibula transplant was driven into the humerus until the head just engaged under the acromion process, while traction was exerted on the arm in order to restore the normal length of the upper arm. The upper end of the humerus was drilled in such a manner that graft and host were pierced completely. A kangaroo tendon was passed through the drill canal and tied securely.

The musculature was quite well preserved with the exception of the distal end of the pectoralis major, which had been resected for about one-half inch (1.25 cm.) to keep away from the tumor. It was just possible to dissect out the various muscles, which were fastened each in the place of its normal insertion on the head and neck of the fibula by means of small kangaroo tendons passed through drill holes.

The arm was immobilized in a plaster cast for three months. There was solid bony union and the patient was encouraged to use the arm. She slipped and fell six months after operation. Roentgenograms revealed a fracture through the fibula graft. The arm was again immobilized and firm bony consolidation was present about ten weeks later. Under physical therapy she regained so much use of the operated arm that she could play golf with it and drive a car. She complained of occasional pain in the shoulder on motion. The pain could be relieved by physical therapy and especially by rest. She was last seen about seventeen years after operation. The shoulder was found somewhat lax and the left arm was considerably shorter than the right, but there was good function of the arm; the patient was even able to play the piano. Roentgenograms four years after operation showed that a part of the fibula had become resorbed at the site of insertion into the humerus, but there was sufficient periosteal bone formation around this area to prevent pseudarthrosis. Another picture, seven years after the operation, revealed good consolidation between graft and host. The head of the fibula was still well implanted below the acromion. There was no sign of local recurrence of the tumor.

The same form of plastic shoulder repair after radical excision of the upper end of the humerus was carried out in other instances.

CASE 2.—A girl, aged 14 years, had been complaining of some pain in her right shoulder for about half a year; she recently fell and since then the pain in the shoulder had been aggravated. Roentgenograms (fig. 1) at the time of admission showed a destructive lesion at the upper third of the humerus with involvement of the epiphysis. The lesion appeared multiloculated at the periphery, cystic in the center. The cortical bone was perforated on the inner side and the surrounding soft tissues were invaded. The picture was suggestive of a giant cell tumor with malignant activity. Radical resection with implantation of the upper end of the fibula was performed. The pathologic report was giant cell sarcoma showing malignant activity. The patient made a very good recovery. She was seen last two years and nine months after the operation. There were no signs of tumor recurrence. She was complaining of occasional pain in the shoulder, mainly on motion. There was active abduction of the shoulder for about 45 degrees. Passive motion was 75 degrees and active external and internal rotation about 20 degrees. There was no shortening of the extremity.

Roentgenograms on different occasions, up to twenty-eight months after the operation, showed excellent bony union at the site of the implantation. The head of the fibula resting against the lower surface of the acromion revealed some structural changes that suggested functional adaptation. There was considerable increase in the thickness of the grafted fibula, and

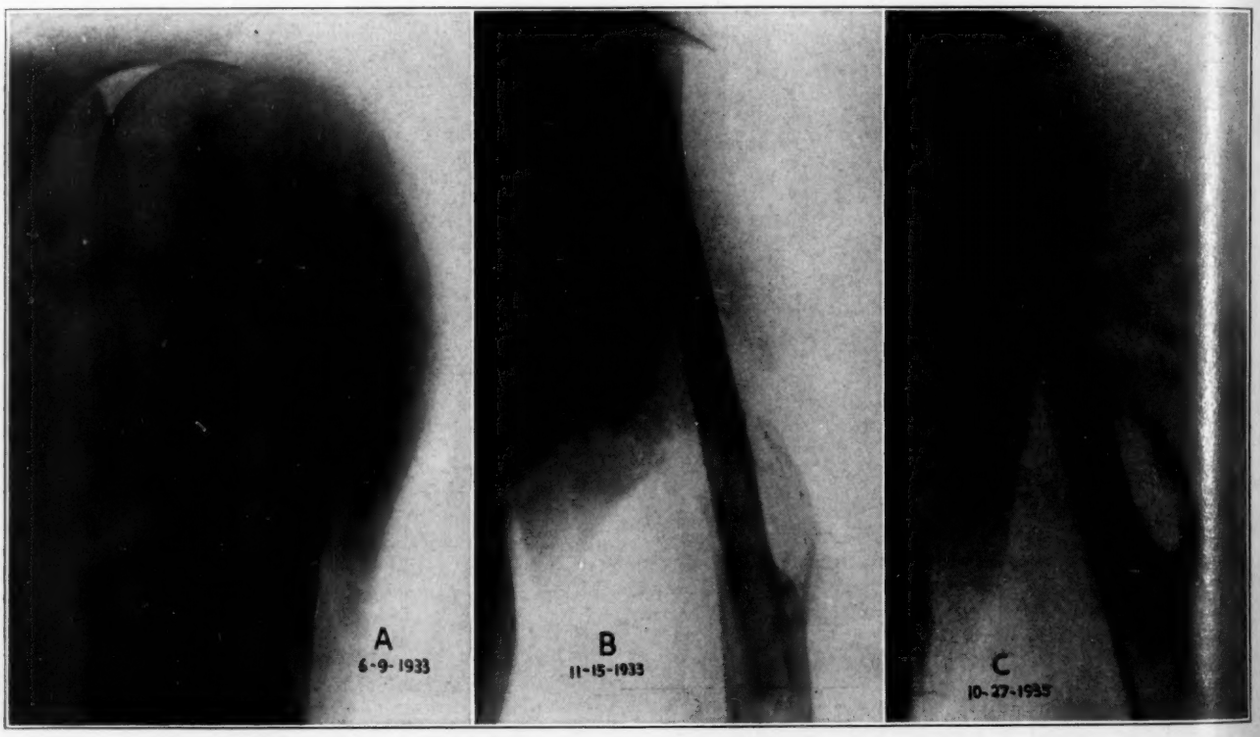

Fig. 1 (case 2).—Giant cell sarcoma, with the upper end of the humerus resected and replaced by fibula grafts. No signs of tumor recurrence.

at the site of insertion into the humerus a considerable amount of periosteal bone had formed or produced a sharp spur formation. There were absolutely no signs of tumor recurrence almost three years after the operation.

CASE 3.—A youth, aged 17, complained of a sclerosing osteogenic sarcoma of the upper metaphysis of the humerus and a typical sunray structure at the periosteal surface. The upper end of the humerus was resected and a fibula graft inserted. Two months after the operation there were metastases to the spinal cord with flaccid paralysis, and the patient died. There was no local recurrence.

KNEE REGION (SIX CASES)

The most frequent localization of bone sarcoma, the region of the knee, and especially the lower end of the femur, was represented in the series by six cases. The localization of the tumor close to or within the epiphysis many times requires the resection of the knee joint. This was done in three cases, and in only one case, in which the tumor was more of diaphyseal localization, could the joint and the lower epiphysis of the femur be saved. The operative procedure in the four was as follows: Under tourniquet the kneejoint is opened by a split patella incision, a motor saw being used. The lower end of the femur is exposed. Great care has to be taken to keep away from the tumor, especially if there is already invasion of the surrounding soft tissues. With a Gigli saw the distal portion of the femur is resected and the upper joint surface of the tibia is freshened by removal of the entire joint cartilage. A strong sliding bone graft is taken from the crest of the tibia of sufficient length to prevent shortening. It is firmly anchored into the distal end of the femur and the proximal end of the tibia with the use of kangaroo tendons passed through drill holes. The sliding graft is reinforced by at least three sliver grafts, which are placed obliquely around so as to form a pyramidal

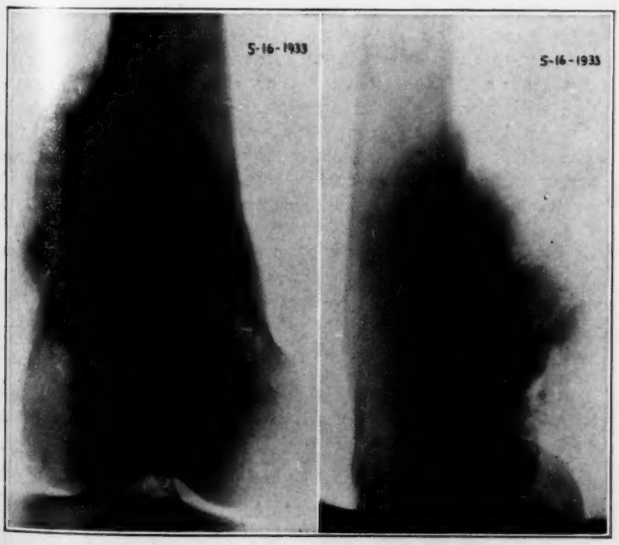

Fig. 2 (case 4).—Osteogenic sarcoma of the lower end of the femur.

structure with the base at the upper surface of the tibia. The two halves of the patella are also used for reinforcement. The soft tissues are then closed tightly and a hip spica cast used for immobilization.

CASE 4 (fig. 2).—A woman, aged 20, was in a train accident; the right knee was caught between the train and the platform. Two or three weeks later she noticed a small lump on the inner aspect of the knee. She was operated on and a tumor was found and pronounced osteofibroma. She received high voltage roentgen treatment but the tumor recurred rapidly. Roentgenograms at the time of admission showed a huge densely calcified tumor at the posterior aspect of the lower end of the femur infiltrating the popliteal fossa. The diagnosis was osteogenic sarcoma of periosteal origin.

The lower end of the femur was resected together with the knee joint and replaced by a heavy tibial bone graft. The pathologic report confirmed the roentgenologic diagnosis. The patient was immobilized in plaster casts for one and a half years. More than two and one-half years has elapsed since the operation; the legs are of even length and she is in very good health

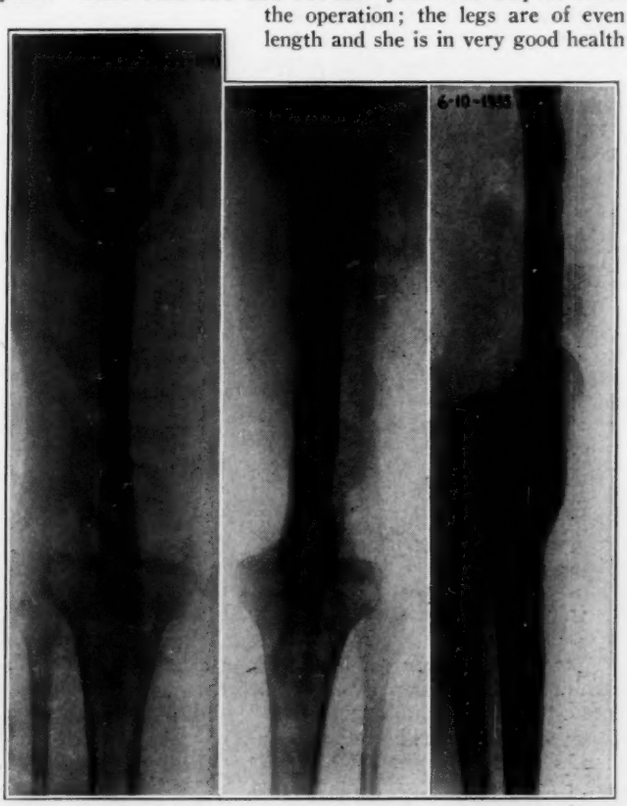

Fig. 3 (case 4).—Tumor resected and replaced by sliding tibial bone graft. Note the marked hypertrophy of the graft.

and walks very well. Roentgenograms show a remarkable hypertrophy of the transplanted grafts, and the resected portion of the femur has regenerated to almost the normal thickness (fig. 3).

CASE 5.—A youth, aged 20, had an osteogenic sarcoma of the lower end of the femur, mainly of the periosteal type. The same procedure as in the former cases was carried out and a "gun-pyramide" of tibial bone grafts was erected. The grafts took very well, and only a part of the patella sloughed out. One and a half years has now elapsed since the operation, and the patient is able to put some weight on the extremity. His general condition is very good. The last roentgenograms show very good osteogenesis around the bone graft. There has been a telescoping of the graft along the tibial gutter, which is responsible for a shortening of more than 1 inch. Because of this, the technic has been changed to an end to end mortise of graft into the tibia. There are no roentgenologic signs of tumor recurrence.

CASE 6.—A man, aged 24, with chondrosarcoma of the lower end of the femur, was treated in the same way. The wound over the tibia became infected. A guillotine amputation was performed through the upper third of the femur. Three months after the operation the patient's general condition is very good. There are no signs of local recurrence or tumor metastases.

CASE 7.—A girl, aged 8 years, had a highly malignant osteochondrosarcoma of the lower third of the femoral diaphysis without involvement of the epiphysis. The problem was different from the three cases just reported. The radical resection of the lower end of the femur with its epiphyseal cartilage together with the knee joint would have resulted in a marked shortening in case the patient should survive the operation for years. It was decided, therefore, to resect just the diseased

portion of the diaphysis but to leave the lower epiphyseal cartilage and the lower epiphysis intact. This was done, and a tibial graft was firmly anchored into both fragments of the femur, reinforced by some sliver grafts. The grafts took very nicely, but the patient had a very stormy postoperative course, with several pyemic abscesses and peroneal palsy of the operated leg. She finally recovered and is now able to walk in a short leg brace to prevent foot drop. Frequent roentgenologic control examinations have revealed a very rapid enlargement of the bone graft at the site of resection, and more than two years after the operation the regeneration has led to normal thickness of the bone. There is shortening of the left leg for about 1 inch. This is mainly due to an anterior bowing of the femur and to the accidental dislodging of the bone graft from its femoral mortise by an assistant dropping the leg after the skin wound had been closed at operation. In spite of this, the graft united promptly to the femoral fragment. There was no recurrence.

CASE 8.—A man, aged 32, had a history of having been operated on at Beekman Street Hospital for a giant cell sarcoma of the lower end of the left femur in March 1931 in which the tumor was thoroughly curetted out and the cavity filled with bone chips taken from the tibia. This was followed by high voltage roentgen therapy. On the day of examination at my office there was a marked recurrence of the tumor, as evidenced in the roentgenogram by a large mass at the external femoral condyle and edema. There was marked nocturnal pain and a loss of 15 pounds (6.8 Kg.). The surgical indication was amputation or wide resection. Resection and replacement with a massive tibial bone graft were done at the New York Post-Graduate Hospital Jan. 21, 1932. The patient did not follow instructions and under direction of another physician he left off the splint and broke the graft by walking without support. A union of the fractured graft was obtained. There was no recurrence four years and four months after resection.

CASE 9.—A youth, aged 18, had three months before admission hit his right knee against an iron shelf. This was followed by the knee slipping, and an exploratory arthrotomy was done. There was no internal derangement of the knee joint. Three months after the operation he began to have nocturnal pain, and a pronounced swelling appeared just above the knee. Roentgenograms disclosed what was diagnosed as periosteal sarcoma extending from about 2 inches above the location of the epiphyseal plate upward for about 3½ inches (8.8 cm.). A biopsy examination resulted in a diagnosis of chrondrosarcoma. About 6 inches (15 cm.) of the shaft of the femur was resected, leaving the epiphyseal cartilage and the condyles of the femur intact. A tibial graft of sufficient length and strength was mortised into the center of the upper cut surface of the lower femoral fragment and into the marrow cavity of the upper femoral fragment, the muscles being pulled about the graft carefully. It has now been six months since the operation, and the graft has proliferated. There is no recurrence.

CASE 10.—A girl, aged 8 years, had a tumor (round-cell sarcoma) of six months' duration involving the lower third of the right femur, extending upward from just above the epiphyseal plate. It has been rapidly enlarging in spite of high voltage roentgen therapy and Coley's serum. Resection was done precisely as in case 9. The tibial graft which had to be about 8½ inches (21.5 cm.) long because of the extensive amount of the femur resected, was mortised into each fragment of the femur. The lower three fourths of it was, however, split with a motor saw and spread precisely as the upper end of a crutch. Each of the prongs of the graft was mortised into the inner and outer border of the cut upper surface of the lower femoral fragment. The upper end of a second graft was placed in the crotch of the first graft and its lower end mortised into the center of the cut surface of the lower femoral fragment. The muscles were then drawn about and between the grafts with great care. The grafts are proliferating. There is no recurrence after six months.

TIBIA (THREE CASES)

CASE 11.—A boy, aged 11 years, had throbbing pain, especially at night, in the left tibia. There was no fever. Roentgenograms revealed some fusiform thickening of the middle of the diaphysis, with sclerosis and slight haziness of the periosteal outline. There was a difference of opinion as to the diagnosis. The lesion was first considered inflammatory by some of the consultants, and biopsy confirmed this diagnosis. The patient disappeared and returned in two months. In this short space of time the tumor had extended through the biopsy hole in the cortex to such a degree that there was no question of its extreme malignant condition. The pathologic report from the resected diaphysis was osteogenic sarcoma, but the roentgenogram suggested more Ewing's tumor. A radical resection of a good 8 inches (20 cm.) from the shaft of the tibia was performed with the preservation of both epiphyseal plates. The graft became broken at the upper end from too early weight bearing. Double wedge-end grafts with sliver grafts beside the fracture junction were inserted, and a firm anchorage of the graft was finally secured without shortening. Two years after the first operation the graft showed roentgenologically some increase in thickness, and the boy was able to bear full weight. Metastases developed in the lungs and the patient died without signs of local recurrence almost two and one-half years after the first operation.

CASE 12.—A woman, aged 49, with generalized Paget's disease of more than twelve years' duration (and nine years under my observation) suddenly complained of pain and swelling at the lower third of the left tibia. There was a tender tumor mass at the inner and posterior aspect, just below the junction of the middle and lower thirds. The tumor was rapidly growing. Roentgenograms taken in an interval of eight months showed first the very typical signs of advanced Paget's disease of the tibia and then an ossified periosteal tumor with sunray structure.

The tumor was resected (pathologic report: osteogenic sarcoma on the basis of osteitis deformans) and a graft taken from the same tibia was used to bridge the defect. About two months after the operation another tumor developed on the left side of the skull, which was considered another sarcoma formation on top of a Paget skull bone. The tumor compressed the brain, and the patient died with cerebral symptoms three months after resection of the tibia. There was no local recurrence at the tibia.

CASE 13 (fig. 4).—A physician, aged 33, with a giant cell tumor of the lower end of the tibia, was first treated by radical curettage, and sliver grafts were put into the cavity for bone formation. There was definite recurrence of the tumor with resorption of the grafts half a year after the operation, associated with nocturnal pain and loss of weight. At this time, the lower 4 inches (10 cm.) of the tibia was resected and the entire joint cartilage of the upper joint surface of the astragalus was removed. Two cortical grafts were firmly inserted with their marrow surfaces together into the astragalus and tied at its upper end with kangaroo tendons passed through drill holes. The grafts took beautifully. It is now nearly a year after the operation; he is still walking with a caliper brace, but the grafts are strong and much enlarged and full weight can be borne on the extremity, even without a brace. There are no signs of recurrence roentgenologically.

This series of thirteen cases, in which malignant growths of the bone were treated by radical resections and bone grafts, permits, despite its relative smallness, a number of definite conclusions. It shows that it is possible, at least in a number of selected cases, to free the patient from a malignant condition of the bone and to preserve a useful extremity. Case 1, presenting a giant cell sarcoma of the upper end of the humerus, has been followed for almost seventeen years without any signs of tumor recurrence. Doubts on the correctness of the tumor diagnosis are not justified because the diagnosis was made on the basis of several slides by a competent pathologist. The diagnosis—giant cell sarcoma—could, of course, suggest the possibility of a giant cell tumor, an essentially benign lesion of the bone. This possibility cannot be ruled out entirely, either for the first or for the second case. But even if the cases were benign giant cell tumors, they were so

markedly advanced and the surrounding soft tissues were found so invaded at the time of operation that the radical procedure with resection was certainly indicated. A curettage in such a weakened condition of the bone would only have led to pathologic fracture and, without any doubt, to recurrence. I shall discuss the question of benign cell tumor more in detail a little later.

The plastic repair of the shoulder with the upper end of the fibula following radical resection, or following badly infected subcapital fracture-dislocation and defect-pseudarthrosis, has proved to be such a gratifying procedure that I can recommend it highly.

Most of my patients have a follow up of around two and one-half years, which is not long enough to judge lasting results in such cases. All the patients were free from tumor in the operative area, although in one death occurred two and a half years after the operation of lung metastases (case 11). Two patients died a relatively short time after the operation, one of metastases to the spine with compression of the spinal cord and flaccid paralysis of the lower extremities (case 3) and in the other, a case of Paget's disease, besides the resected sarcoma of the tibia another malignant tumor of the skull developed with brain compression (case 12). There was no local recurrence in either case. This fact is of considerable interest. It shows that it is possible to remove all the tumor even in very extensive malignant changes of the bones. In tumors of diaphyseal localization in juvenile individuals one may even succeed in preserving the epiphyseal plate and the joint. The danger of blood vessel and nerve involvement is apparently not as great as is commonly stated. In my experience tumors of the upper end of the tibia and fibula show early involvement of the tibial vessels. I could keep away from the main vessels in all cases mentioned; in case 8, however, the peroneal nerve had to be resected with the tumor, resulting in a foot drop.

Further clinical observation and richer material will have to show whether this method will secure lasting results in bone sarcoma of high malignancy. It seems to be the method of choice in the so-called benign giant cell tumors, however. Every surgeon of some experience knows that these tumors are by no means always as benign as one would think from the term. On the contrary, they are as a rule very resistant to the routine treatment with curet and caustic substances. Local recurrence following curettage is very frequent. More advanced and extensive cases can hardly be benefited by curettage. These cases, most frequently found at the lower end of the femur, are the ideal cases for resection and the plastic repair with the graft pyramid.

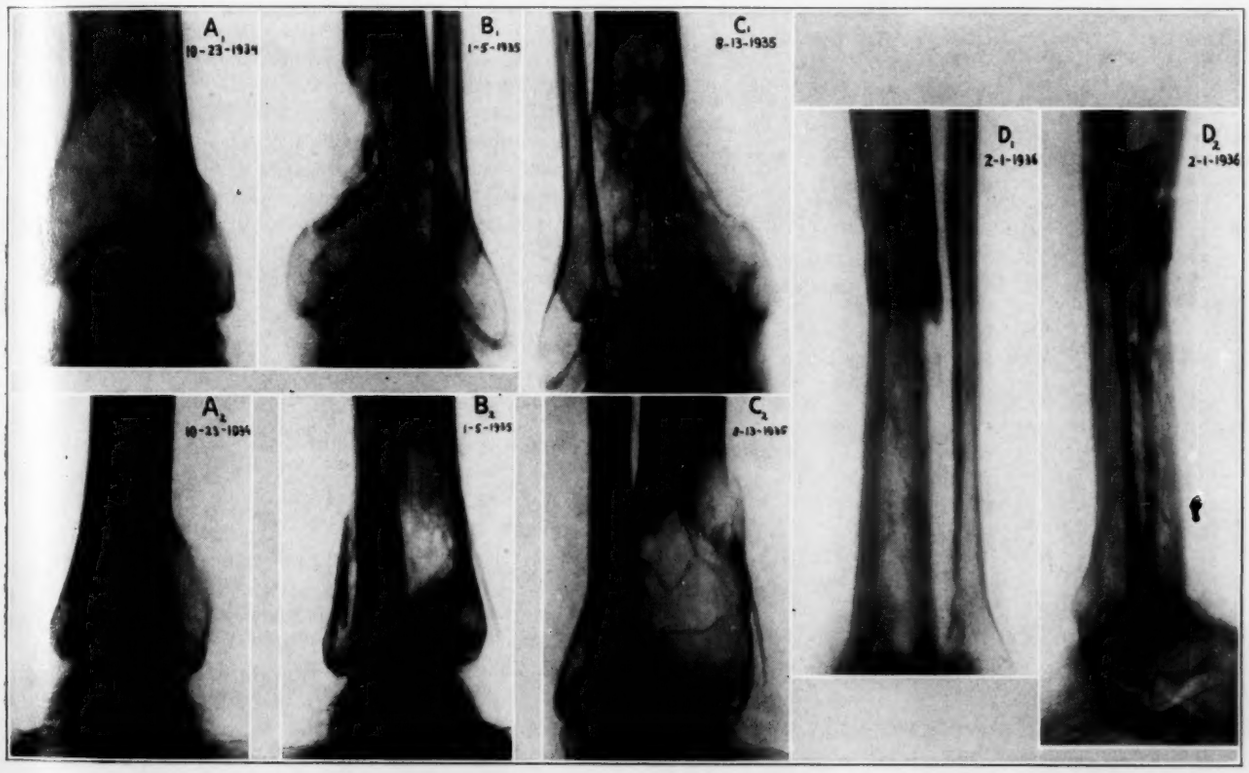

Fig. 4 (case 13).—Giant cell tumor of the lower end of the tibia, first curetted (B_1 B_2) with implantation of sliver grafts, and recurrence (C_1 C_2). It was then resected and replaced by two cortical bone grafts (D_1 D_2) implanted into the astragalus. There was no tumor recurrence.

I think that in no case of benign giant cell tumor should amputation be performed before the plastic restoration of the resected tumor has been tried, and I also feel that this method should be used immediately, as soon as curettage is followed by recurrence. I am quite convinced that with this procedure a great number of extremities will be saved, many of them it is true with stiff joints, but certainly of better use than artificial limbs. I think it is unnecessary to say that the operation should be performed only by experienced surgeons.

In some of the cases (1, 6 and 8) shortening up to more than 1 inch of the operated extremity took place within the immobilization period.

The extensiveness of the operation, particularly involving muscle and the tendency to postoperative hematomas, which follows the removal of the tourniquet with clot accumulation in the dead spaces, results in a considerable danger of postoperative infection. This occurred in three of the cases, necessitating the amputation of the extremity of one of them; the two

others recovered. I have recently changed the method slightly by implanting the tibial graft in the center of the top of the head of the tibia instead of in front. This prevents the telescoping of the graft along the tibial gutter and it also lessens the difficulty of preventing dead space at the popliteal region. The muscle sleeve can be closed much tighter around the graft and the peril of dead spaces along the graft is diminished. Much painstaking suturing with continuous sutures of muscle tissue about the graft should be done, a curved round point needle being used.

After everything has been said, the most important lesson to be derived from these thirteen cases over a period of seventeen years is that there has been no local recurrence of the tumor. From this point of view the procedure has proved as safe as amputation. In every case amputation was indicated.

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ABSTRACT OF DISCUSSION

DR. ARTHUR STEINDLER, Iowa City: One cannot help being impressed in Dr. Albee's paper by the brilliance of his technic. He demonstrates the possibility of substituting by osteoplastic methods for these great defects that arise from radical resection. In a certain percentage of cases of Paget's disease, malignant degeneration occurs. It is noted that in most of these operations the shelling out of the tumor is surprisingly clean and easy. I take it that these tumors were comparatively of a mild degree of malignancy and certainly in the stage before a wide proliferation in the tissues has taken place. My experiences with bone graft replacement in bone tumors are confined exclusively to giant cell tumors and giant cell sarcomas. Everybody knows the difficulties of histologic differentiation between the two types. In addition to this there is the relation of benign bone cyst to giant cell tumor, which is considered a variant of the former by Geschickter. A giant cell tumor at the lower right femur was thoroughly curetted, and the defect, bigger than a man's fist, filled with bone chips, removed from both tibias, which were tightly packed. This tumor consisted of a dense accumulation of giant cells which filled the active center of the tumor, though at the endosteal side of the periphery it was more fibrous and showed a tendency to formation of partially calcified fibrous bone. The roentgenogram showed that most of the implanted bone chips had taken, but the amount was too small to fill the huge cavity. I have seen small cysts completely filled out after curetting and filling in with bone chips. On the other hand, the one experience that I had with a giant cell tumor was instructive. The tumor was in the neck of the femur, where it formed a huge cyst, covered by a paper-thin shell of bone, perforated in places but without infiltration of the soft tissues. The cyst was filled with bloody fluid, probably from recent infractions, and lined with a wall of granulated tumor tissue. The impression was that of a giant cell tumor with cystic degeneration. The cavity was curetted and filled with a mass of bone chips. The patient did not get well after operation and developed a generalized adenopathy but no metastatic lesion. The roentgenogram showed an extension of the process, and an exploratory operation revealed the upper third of the femur practically gone, the big, blood-filled cavity lined with an irregular wall of tumor tissue, and extensive infiltration of the surrounding soft tissue. The histologic examination now showed a highly malignant giant cell sarcoma. Malignant degeneration of benign bone cyst is reported as a rarity. This singular experience seems to indicate that, gratifying as the results of graft or bone chip replacement may be in cyst or benign giant cell tumors, they are not encouraging in malignant giant cell sarcoma. I mention this merely in relation to the fact that Dr. Albee believes in and has emphasized the radical removal of giant cell tumor because of its potential degeneration, because he thinks that the results of curettement and the filling in of the bone are unsatisfactory. It might well be that this is the case, and this particular experience which I have cited seems to bear out this fact.

AIR-BORNE INFECTION

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In the dissemination of plant life, the atmosphere is nature's prime sower of the seed and thus vitally affects all living things. Air currents, by gripping the extended surfaces of winged larger seeds and the protuberances of the smaller pollens, lift, transport and release them at their destinations. As the size of particles decreases, the weight decreases more rapidly than the surface area and the tiny spores of molds and fungi require no special adaptation for air travel. Bacteria are even smaller, but since they have no power to invade the atmosphere except in association with other matter, their flight range is determined not by size but by the character of the matter with which they are associated.

"Dust and droplets wafted into the air include bacteria. The number of such temporary passengers on the wing depends upon the kind, the source and conditions which lift them into the air, their survival rate, the air currents which transport, disperse and dilute them within the atmosphere, the rate of deposition and the physical and chemical conditions of their atmospheric environment." [1]

The theater of operation of these phenomena is vast: micro-organisms have been found in polar flights and in the highest penetrations of the stratosphere. We are not concerned with this outer atmosphere except as a source of infinite dilution, and in this paper only the dense layer close to the earth's surface will be considered. Particularly in those semienclosed atmospheres wherein we live, dilution is restricted and the spread of parasites is facilitated. On the other hand, these ventilated spaces are also most subject to human control.

Perhaps a discussion of bacteria in air should begin with the pregnant researches of Louis Pasteur, which inaugurated the science of bacteriology and the germ theory of disease. His classic experiments on spontaneous generation, published in 1861,[2] proved that air was populated with microscopic germs which caused putrefaction and fermentation. This fact seemed to substantiate the universal belief that air was the vehicle of contagion, and for twenty years thereafter this thought motivated the work of Lister [3] and of Tyndall.[4] Strangely enough, the perfection of bacteriologic technic during the last two decades of the nineteenth century, in which the specific agents of disease were identified, disclosed in rapid succession their transmission by other routes without demonstrating in air recognized pathogenic organisms. When Flügge[5] failed

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1. Rosenau, M. J.: Preventive Medicine and Hygiene, ed. 6, New York, D. Appleton-Century Company, 1936.

2. Pasteur, Louis: Mémoire sur les corpuscules organisées qui existent dans l'atmosphere, examen de la doctrine des générations spontanées, Ann. sc. naturelles, partie zoologique **16:** 5, 1861.

3. Lister, J. B.: A comprehensive bibliography of Lord Lister's articles is given in "Lister and the Ligature," New Brunswick, Johnson and Johnson, 1925.

4. Tyndall, John: Essays on Floating Matter of the Air, New York, D. Appleton & Co., 1882.

5. Flügge, C.: Die Verbreitung der Phthise durch staubförmiges Sputum und beim Husten verspizte Tröpfeden, Ztschr. f. Hyg. u. Infektionskr. **30:** 107, 1898.

to recover nasopharyngeal organisms on plates exposed farther than a few feet from a person's coughing and sneezing and concluded that they settled out in short distances and in brief time intervals, air-borne infection seemed almost eliminated. Meanwhile, sanitary bacteriology during the next twenty years, by demonstrating general bacterial contamination, seemed to justify the belief that such diseases as could not otherwise be accounted for were spread by direct or indirect contact. In the face of the growing momentum of contrary opinion based on this negative evidence, the case against air was dismissed with a Scotch verdict, and the theory of air-borne transmission of infection was well-nigh abandoned.

During the past five years, certain developments in the technic of air bacteriology at Harvard University have caused a modification of our views regarding the inability of air to transmit infection. The invention of an instrument[6] for the extensive exploration of and the practical experimentation on controlled atmospheres initiated these studies. The development of a technic for producing bacterial suspensions by atomizing cultures into these controlled atmospheres became an important factor in the experimental investigation. The technic so developed provided a means for the study of the dispersion of bacteria in air, and the effect of physical and chemical agents on their viability.

THE EXCHANGE OF NASOPHARYNGEAL FLORA BY AIR

Droplets and Droplet Nuclei.[7]—Droplets expelled into the air from the nose and throat in sneezing, coughing, and the like, do not necessarily, as was concluded from Flügge's experiments, fall immediately to the ground within a short distance from their source. This theory is based on an assumption of constant size, which ignores the important factor of evaporation. As droplets become smaller, the surface exposed to air resistance becomes relatively greater when compared to the weight or gravitational pull toward the earth, and droplets therefore, in accordance with Stokes's law, fall more and more slowly as the size becomes smaller and smaller. The rate of evaporation, which also depends on the surface area, becomes relatively more rapid as the droplet volume becomes smaller, and some size must exist smaller than which a droplet could not fall the height of a man without complete evaporation. This droplet size has been estimated as approximately 0.1 mm. The residues of droplets of this size, derived from physiologic solution of sodium chloride or from body fluids are, after evaporation, so small that their behavior in air is more comparable to a particle of smoke than to the droplets described by Flügge. They may be considered to float or drift with the slightest air currents and therefore to be in effect a part of the atmosphere itself.

This fact may be simply demonstrated by atomizing liquids into a dark enclosed chamber, such as our experimental tank, through which a strong beam of light is projected. Distilled water evaporates almost immediately, leaving no evidence in the beam. If the liquid contains substances in solution, the nuclear residues leave a fog on evaporation, which is clearly revealed by the Tyndall effect. The presence of salts suspended in air can be easily demonstrated by drawing the air through a Bunsen flame.

Liquid suspensions of micro-organisms may be atomized into the tank and their presence can be easily demonstrated quantitatively by the air centrifuge. It may readily be shown that they persist in diminishing numbers for hours or days.

Transmission of infection through the air may therefore take one of two forms, depending on the size of the infected droplet. The more obvious form, recognized by Flügge, is droplet infection proper. It applies to droplets larger than 0.1 mm. in diameter, which are rapidly removed from the air by gravity before they can dry and within a short distance from the source.

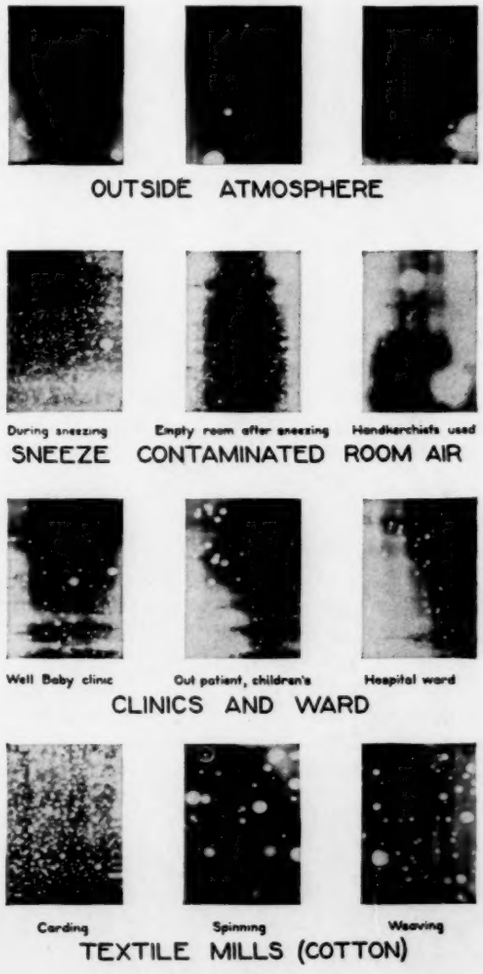

Fig. 1.—Bacteria in air.

The second form may be called air-borne infection and deals with the dried residues of infected droplets, or droplet nuclei, derived directly from droplets less than 0.1 mm. in diameter, depending primarily on air for the buoyancy that keeps them suspended for longer times and carries them longer distances. Droplet infection may change into air-borne infection when larger drops settle, evaporate and are lifted into the air as dust.

The epidemiologic characteristics of droplet infection and droplet nuclei infection are by nature opposite. Droplet infection is essentially localized and concentrated, while infection broadcast by droplet nuclei is more dispersed and dilute.

The basic fact that micro-organisms can remain suspended alive in air for periods which may permit their wide dissemination has thus been demonstrated.

6. Wells, W. F.: On Air-Borne Infection: I. Apparatus for the Study of the Bacterial Behavior of Air, Am. J. Pub. Health **23**: 58 (Jan.) 1933.

7. Wells, W. F.: On Air-Borne Infection: II. Droplets and Droplet Nuclei, Am. J. Hyg. **20**: 611 (Nov.) 1934.

Viability of Droplet Nuclei Infection.[8]—The interval of time spent in the air by Flügge droplets is too brief for significant change in the viability of infection, as it is also too brief for wide dissemination. Since droplet nuclei remain in suspension for long times and may drift considerable distances, the viability of the bacteria associated with them becomes an important factor in the spread of air-borne infection. The difference between the rate at which droplet nuclei are removed from the atmosphere by settling, and the rate at which infection disappears from the air into which they are expelled, depends on the rate of survival of micro-organisms attached to these nuclei. The disappearance rates have been determined for sixteen organisms, chosen to represent several different normal habitats and other characteristics of hygienic significance in the problem of air-borne infection.

The disappearance of the Pfeiffer bacillus within an hour was in sharp contrast with the long period of several days that B. subtilis persisted in the air of the chamber. Staphylococcus aureus disappeared more rapidly than B. subtilis, but since it was recovered after three days it may be classed among the more resistant organisms. The water-borne organisms, on the other hand, B. prodigiosus, B. pyocyaneus and B. violaceus, did not survive one day, how much less a time being undetermined.

Four organisms characteristic of the respiratory tract, pneumococcus type I, B. diphtheriae, Streptococcus haemolyticus and Streptococcus viridans, were recovered after two days, while none of the four organisms typical of the intestinal tract, B. coli, B. dysenteriae Hiss Y, B. typhosus and B. paratyphosus A, were recovered at the end of the first day or at the end of eight hours when samples were taken after this time interval. If the Pfeiffer bacillus may be excepted as a special case, this respiratory group of organisms may be regarded as decidedly more viable in air than the intestinal group of bacteria, in spite of the rapid decrease in both groups.

Bacteriophage active against the Hiss Y dysentery bacillus was recovered from air at the end of twenty-four hours and cultivations from the plaques demonstrated the identity of the bacteriophage. The rate of disappearance during the first three hours also resembles the behavior of bacteria in air. The viability of this bacteriophage was therefore greater than for the intestinal group and less than for the respiratory group of organisms.

The recovery of virus experimentally suspended in air was made possible through the collaboration of Dr. H. W. Brown, who had previously become proficient in the identification of the virus of influenza. The lungs of a ferret infected with the Puerto Rico 8 strain[9] of influenza virus being used as the source of infection, filtered liquid suspensions of virus were atomized into the tank, recovered in liquids by the air centrifuge, and inoculated intranasally into ferrets.[10] All the ferrets inoculated with the material collected from the air within an hour after suspension contracted influenza. None of the ferrets inoculated with samples collected from the tank an hour or more after suspension of the virus contracted the disease. On the basis of this exploratory study, in which the technic was evolved as it progressed, it is not believed that the viability end point of influenza virus has necessarily been reached.[11]

The time and distance which infection from droplet nuclei may travel depends more on the viability of the organisms in air than on the settling rate. The differences in viability of the various micro-organisms when suspended in air seem to be significant.

Dust and Droplet Nuclei.—The slow rate of settling of nuclei produced by evaporating droplets distinguishes them from particles of bacteria-laden dust. It should be obvious that the number of particles that settle on a given area in a given time depends not only on the number of particles in the air but also on the rate at which they settle. Since the coarser particles settle more rapidly, more larger particles would settle on a given area in a given time than smaller particles assuming equal concentrations in the air, as determined by the centrifuge. The ratio between the plate count and the number in a given volume as determined by the centrifuge may thus be used to indicate the rate of settling and the equivalent size of suspended particles.

It has been found by tests on artificial humidification with bacteria-laden water that the nuclei of the evaporating droplets settle with extreme slowness as compared with the settling rate of ordinary atmospheric dust. A hundred times as many dust particles as nuclei settle on a plate for the same atmospheric concentration. Twelve out of fifteen eosin methylene blue plates remained sterile when exposed for fifteen minutes to air containing 250 B. coli in each standard sample of 10 cubic feet, as determined by the centrifuge. This shows the impracticability of Flügge's technic for determining the presence of micro-organisms in nuclei resulting from mouth spray. His tests showed that they remain suspended in the air rather than that they settle out in a short distance. With the centrifuge, however, they may be readily demonstrated.

These conclusions were corroborated under practical working conditions in a study of the bacterial contamination of the air of textile mills in Massachusetts.[12] Much dust is lifted into the air of the breaking and carding rooms in cotton mills. Comparatively small amounts of dust are found in weaving rooms, but enormous quantities of water are required to humidify the air. The ratios of plate to tube counts in the dusty rooms was four times greater than the ratio in weaving rooms, which were heavily humidified, showing the high preponderance of dust in the former and of nuclei in the latter.

Little doubt can remain as to the adaptability of nuclei to be conveyed by air when it is found that they drift with so much greater readiness than the dust with which all are familiar.

Dispersion of Droplet Nuclei Through Buildings.—Wide distribution of "nuclei" in a building was demonstrated by inoculating with a culture of B. coli the humidifying water of a one-room air conditioner in the basement of the Harvard School of Public Health. This building does not have mechanical ventilation and it conforms in general design to the building of the National Institute of Health described by McCoy[13] in which psittacosis virus appeared to have been conveyed

8. Wells, W. F., and Stone, W. R.: On Air-Borne Infection: III. Viability of Droplet Nuclei Infection, Am. J. Hyg. **20**: 619 (Nov.) 1934.

9. Francis, Thomas, Jr.: Transmission of Influenza by a Filtrable Virus, Science **80**: 457 (Nov. 16) 1934.

10. Brown, H. W.: The Occurrence of Neutralizing Antibodies for Human Influenza Virus in the Sera of Persons with Various Histories of Influenza, Am. J. Hyg. **24**: 361 (Sept.) 1936.

11. Wells, W. F., and Brown, H. W.: Recovery of Influenza Virus Suspended in Air, Science **84**: 68 (July 17) 1936; Am. J. Hyg. **24**: 407 (Sept.) 1936.

12. Wells, W. F., and Riley, E. C.: An Investigation of the Bacterial Contamination of the Air of Textile Mills with Special Reference to the Influence of Artificial Humidification. Report in preparation. (An abstract of this report may be found in the annual report of the Massachusetts State Department of Health for 1934, Public Document 34.)

13. McCoy, G. W.: Psittacosis Among the Personnel of the Hygienic Laboratory, J. Infect. Dis. **55**: 156 (Sept.-Oct.) 1934.

by air from the basement to upper floors. Numbers of B. coli were recovered from the ends of every corridor up to the top floor of the three-story building, where the concentration reached approximately 1 per cent of that in the air-conditioned room.

Infected nuclei can therefore be dispersed by ventilating currents throughout a building, as was shown by the dispersion of nuclei from humidification with contaminated water.

Expulsion of Droplet Nuclei by Sneezing.—These air-floating nuclei are peculiarly adapted to bear infected matter, and the physiologic processes of respiration provide an obvious mechanism for implantation on the nasopharyngeal tissue of a person breathing the air. There remains in the chain of evidence of air-borne infection the demonstration that droplets sufficiently small to evaporate completely are actually expelled into the air by expiratory processes and that such droplets may, during pathologic reactions, be infected.

The experimental demonstration that large numbers of nuclei, infected by organisms typical of the nasopharynx, are expelled in sneezing, forged the last link in this chain of evidence. By the simple procedure of broadcasting small amounts of "sneeze powder" into a room, a practical joke was turned into a conclusive experiment. Fifty sneezes were induced from a group of subjects in a standard air-conditioned room. Bacterial samples collected in the air centrifuge on blood agar tubes revealed thousands of alpha streptococci and M. catarrhalis. Even after the subjects had left the room, the air contained many hundreds per sample. The application of handkerchiefs to smother the sneeze showed marked results in preventing expulsion of micro-organisms into the atmosphere. These results are illustrated in figure 1.

A convincing experiment was conducted under natural conditions in a demonstration of the air centrifuge to a class of twenty-five graduate students in a room of about 10,000 cubic feet capacity. The air centrifuge was placed at the speaker's table at least 10 feet away from the nearest person and the exhaust pointed not toward the class but laterally. The air centrifuge inspires continuously at about the same rate as a person during the maximum phase of inspiration and may therefore be considered a mechanical subject. A small amount of "sneeze powder" was dusted into the exhaust stream of the air centrifuge, being thereby projected into the room more as in normal expiration than in the more violent act of sneezing. That the expired air carried the particles to the class after a lapse of several minutes was indicated by occasional sneezes during the next ten minutes. Sneezing had ceased before the second ten-minute tube was taken, following which the class was dismissed and a third sample taken. The first tube, taken during the interval of sneezing, showed, on incubation, many alpha streptococci. The second tube, taken after the sneezing had ceased, however, showed a very large increase, thus indicating that the organisms had become dispersed throughout the room and were returning to the machine. The third tube showed a marked decrease but still gave positive evidence of contamination. In this experiment, contamination of the air by the machine was evidenced by the sneezing, and contamination of the room by the sneezers was evidenced by bacterial colonies in the tubes. A perfect cycle was thus completed and little doubt can possibly be entertained that most of the persons in the room were infected by the machine and by one another.

Whenever a person sneezes, many thousand nasopharyngeal organisms remain suspended in the air, and in commonly occupied, enclosed spaces, the exchange of nasopharyngeal flora is inevitable.

Recovery of Nasopharyngeal Organisms in Normal Occupied Atmospheres.—It is not necessary to employ experimental expedients to demonstrate the exchange of nasopharyngeal flora in occupied spaces. A little skill in the recognition of alpha streptococci on blood agar tubes makes their normal recovery during the winter a simple routine performance.[14] Samples of air taken from well baby clinics, children's medical clinics, hospital wards, theaters, factories, school rooms and outdoor air confirms the deduction that the numbers of alpha streptococci correspond to the degree of contamination by the occupants, as shown in table 1. It would seem obvious that under conditions of crowding in enclosed rooms we are breathing one another's nasopharyngeal flora as we once drank each other's intestinal flora in our water supplies, and the consequences of such practices become a study in sanitary science.

We wish to resuggest[15] the alpha streptococcus, an organism normally present in the nasopharynx, for similar service in indicating the degree of nasopharyngeal contamination of air, to that of B. coli in drinking water as indicating the degree of intestinal contamination, since the implied potentialities are analogous. An extensive study of the great diversity of inhabited atmospheres of New York City has been conducted during the past winter, and the results of 2,000 samples bear out this conclusion.

The sanitary analysis of air of normally occupied rooms establishes the nasopharyngeal contamination of our breathing air, as the presence of B. coli establishes the presence of intestinal contamination in drinking water.

AIR-BORNE INFECTION AND AIR-BORNE DISEASE

Universality of Nasopharyngeal Infection.—These bacteriologic experiments would seem to demonstrate a mechanism of air-borne infection that provides for the exchange of nasopharyngeal flora. The burden of proof of air-borne infection, which had hitherto rested on bacteriology, has been lifted, and there now rests on epidemiology the burden of disproof of air-borne disease. Except in the case of such manifestly widespread clinical diseases as measles and smallpox (uncomplicated by vaccination), in which intensive outbreaks seemed almost to require the possibility of air-borne transmission, such disproof did not seem difficult a quarter of a century ago.

It has seemed almost axiomatic that contamination of the air we breathe should bring about almost universal infection, although contamination of a common water supply does not necessarily do so. The quantitative factor of dilution could account for the occurrence of sporadic cases of air-borne respiratory infection, just as it accounts for sporadic cases of water-borne intestinal disease.

Nevertheless the widespread occurrence of clinical cases of measles and smallpox (in which infection is manifested by disease) almost requires the hypothesis of air-borne transmission. At the time when the indictment against air was dismissed, the extent of spread of infection was defined by the extent of the spread

14. Wells, W. F., and Riley, R.: The Alpha Streptococcus as an Indicator of Nasopharyngeal Contamination, to be read before the American Public Health Association during October.

15. Gordon, M. H.: Report on a Bacterial Test for Estimating Pollution of Air, Rep. M. Off., Local Gov. Bd. (London) **32**: 421, 1903-1904.

of clinical disease, in this definition the two being synonomous. While carriers had already been recognized and been assigned an important rôle as infectors in the spread of disease by contact, their rôle as infectees in the epidemiologic determination of the extent of spread of infection was disregarded. Means for tracing subclinical infection have since revolutionized the concept of the extent of spread of infection [16] through the nasopharynx, though much of this evidence has not yet been assimilated into our epidemiologic thought. The mass of evidence accumulated by tests for immunity and sensitiveness, for carriers, and for epidemiologic studies of age incidence, now indicates that many, if not most, of these infections spread as readily and as broadly as the virus of measles. Translated into infections, these tests may be interpreted as evidence that few children escape the nasopharyngeal infections, and probably most adults have been infected and repeatedly reinfected.

TABLE 1.—*Bacteria in Air (Blood Agar, 37 C.)*

	Number of Samples	Average Number of Colonies per 10 Cu. Ft.	
		Total	Alpha (hem.)
Outside laboratory:			
Summer	14	23	0.0
Autumn	17	13	0.0
Winter	8	11	0.1
Spring	21	25	0.3
Experimental:			
Quiet	21	20	0.0
Sneezing	14	3,090	2,200
Empty after sneezing	4	1,440	920
With handkerchiefs	7	66	1.0
College classrooms and laboratories	18	65	1.3
Lecture hall:			
Before lecture	2	91	0.0
After lecture	2	438	3.5
Public schools:			
Modern	13	59	5.3
Old	14	261	10.8
Theater, modern air conditioned	22	28	0.6
Clinics, children's and infants' sick and well	28	728	13.3
Miscellaneous hospital wards	13	247	2.9
Operating room	1	230	3.0
Textile mills (summer conditions):			
Cotton:			
Breaking and carding	13	3,090	0.0
Spinning	10	366	0.0
Weaving	7	733	0.0
Woolen:			
Dusty operations	4	267	0.0
Intermediate	7	112	0.0
Humidified	7	363	0.0
Outside factories	14	46	0.0
Total samples	281		

Where the clinical cases of these diseases represent only a small fraction of the infections, conclusions based on cases must be revised before being offered in evidence. It has been argued [17] that in the enclosed atmospheres of contagious hospitals, with known cases of nasopharyngeal disease, the incidence of secondary cases was too low to warrant the conclusion that the air of the building, shared by all, was infective. The factors of immunity, of subclinical infections and of preclinical infectiousness have been overlooked in the interpretation of the much quoted reports on hospital cross infection. When were the cases most infective, before or after coming to the hospital? Of the exposed, how many were already immune, what was the nonimmune population actually at risk per annum? How many were infected but reacted with an immunity response rather than the clinical disease? How much seed fell on stony ground?

The cases of "diseases of childhood," the total number of infections required to immunize a population to these diseases before maturity, and the repeated attacks of those diseases in which no permanent immunity is conferred reveal a universality of infection which falsifies the premises on which was based the conclusion that the air, breathed by all, cannot be infective.

If the total number of nasopharyngeal infections required to immunize a population before maturity is compared with the number of intestinal infections that would condemn a water supply as being highly dangerous, it might be concluded on epidemiologic grounds that the atmospheres of our common habitations are even more highly infective. It may be that the air of our schools, institutions and homes, where children mix freely in the highly infectious preclinical stage of disease, where many more harbor infection subclinically, where air is less diluted than in separate wards opening into common corridors, or even in wards where bed isolation is practiced, is more heavily infected than the air of contagious hospitals.

The universality of nasopharyngeal infection does not prove that it is air borne, but it meets the objection that, if air were infective, nasopharyngeal disease would be universal.

Velocity of Spread.—The aptness of the theory of air-borne infection to account for disease transmission has never been questioned, and "the theory is reluctantly given up, since it is the easiest method of explaining the spread of readily communicable diseases." [1] Those, however, who have adopted the alternative theory of "contact" infection will point out the undeniable fact that the special conditions which have been set up for the spread of air-borne infection are likewise conducive to intimate contact. Just what is meant by the word contact as applying to the spread of infection should be defined in objective terms before the two theories can be contrasted.

If the more or less direct spread of infection from person to person, the quick transfer of fresh infective material, proximity in time and space between infected and noninfected, constitutes contact, then the condition of air-borne infection by breathing one another's air in semienclosed spaces would constitute a rather extended form of contact infection. The preceding discussion has not assumed the broadcasting of infection in the sense that wind-blown pollens causing hay fever are broadcast.

While these distinctions may reconcile those to whom the words "air-borne infection" might revive the ancient and exploded theory of miasms, failure to extend the concept of "contact" may lead to the breakdown of measures for the prevention of this type of infection. It is necessary therefore to distinguish the different phases of "contact," and it would seem that this might become possible by a statistical examination of the velocity of spread by the different phases.

If contact infection requires that an uninfected person touch an infected person in some particular manner, or touch something in a particular manner which the infected person has touched in a particular manner, or that the two be within the short radius of Flügge droplets during the brief interval of fall, the rate of spread would be limited by these circumstances. If the

16. Stallybrass, C. D.: The Principles of Epidemiology, New York, Macmillan Company, 1931.
17. Chapin, C. V.: The Air as a Vehicle of Infection, J. A. M. A. 62: 423 (Feb. 7) 1914.

chance of infecting each individual is not large, the chance of simultaneous infection of many would be exceedingly small, and disease would limp in its spread. (Contact outbreaks of typhoid die out not from exhaustion of inflammable material but from difficulty of transferring the spark.) If, on the contrary, the sneeze-infected air of a room were breathed by many persons over a considerable interval of time, simultaneous infection could be realized, and the velocity of infection would be ample to explain even the explosive pandemic of influenza in 1918-1919. If refinements in statistical methods can determine the velocity of subclinical infection, it may be possible to distinguish between these two modes of transmission.

Recognizing, of course, that all forms of contact work cooperatively in spreading infection, there is good reason to believe that only that phase which is called air-borne infection can be swift enough to explain the epidemic spread of nasopharyngeal disease in non-immune populations.

Diseases as Biologic Entities.—If infectious disease may be regarded as a biologic entity requiring the continuous propagation of parasites though a chain of hosts,[18] it would follow that a mode of transmission on which the continuity of the disease depended must postulate a means for the parasite to leave its discarded host, exist, and be transported to a new host into which it must gain entrance. The characteristics of diseases conveyed through the nasopharynx would seem to satisfy such postulates, as their pathology provides for a means of infecting air, the etiology seems to indicate causative agents capable of existing in air, and physiology provides for the planting of the parasite on the respiratory passages of a new host. Their universality even at early ages indicates widespread infection clinically or subclinically, and the velocity of spread seems to be characteristically explosive.

If one compares diseases as a group whose portal of entry and exit is the nasopharynx with those whose entrance is through other portals, one finds marked group contrasts. The nasopharyngeal group may in these respects be contrasted with typical gastro-intestinal diseases: where frequent uncontrolled liquid discharges are conducive to the contamination of food, milk and water; where the organisms can readily survive, if not multiply, in these mediums and appear unadapted to life in air; where the epidemiology makes it possible to incriminate such sources even though the organism cannot be found, and where control measures have dramatically demonstrated the soundness of the hypothesis.

They may be contrasted with the insect-borne diseases where discharge of the organism is not pathologically provided; where the organism cannot survive the rigors of environmental transfer, but the existence of which in the peripheral circulation adapts them to withdrawal through the proboscis of an insect, within whose body they are adapted to survive or even of necessity bound to sojourn; where the occurrence of the disease is perfectly circumscribed by the prevalence of the insect, and where control of insects inevitably stamps out the disease.

They may be contrasted with typical contact diseases such as the venereal diseases, where external lesions are habitually brought into physical contact with susceptible tissue; where life of the pathogen outside the body is almost impossible; where any other explanation of transmission is regarded with skepticism, if not derision, by the specialist, and where prevention is limited by the power to control the contacts.

The argument that once all communicable diseases were attributed to air and that, the more perfect becomes our knowledge, the less air becomes implicated cannot in view of these differences be carried *ad absurdum.*

The more intimate our knowledge of the modes of transmission becomes, the more evident does it become that diseases are adapted to transmission by diverse routes, and among these air transmission of nasopharyngeal infection may not be the least important.

Nasopharyngeal Infection Still Uncontrolled.—Where the transmission of disease has been prevented by control measures, there can be little doubt as to the correctness of the theory of transmission. It may therefore be significant that those diseases which have so far defied control are those in which the causative agent enters and leaves through the nasopharynx. In an evaluation of the importance of diseases made by the United States Public Health Service,[19] the only infectious diseases considered as of a first order of magnitude were influenza and pneumonia, and tuberculosis.

The Public Health Service figures show, in particular, that:

1. More than 85 per cent of the deaths from infectious and parasitic diseases occurring in the United States in 1933 were from diseases in which the usual portal of entry of the causative micro-organism is the nasopharynx.

2. Of the important reportable diseases in 1933, the incidence of measles was highest, that of influenza second.

3. Of the incidence of illness, based on nation-wide periodic surveys in 1928-1931, colds and bronchitis, influenza and pneumonia, and tonsillitis occupy the first three places in annual incidence, causing considerably more than half of the total cases.

4. Among industrial workers during 1933, the largest single cause of illness of eight days' duration was influenza and pneumonia.

5. Nation-wide periodic surveys in 1928-1931 show that influenza and pneumonia caused more days in bed than any other disease. Colds and bronchitis rank second, tuberculosis third. The diseases spread through the nasopharynx caused a total of 218 days in bed for every 100 persons, as against 167 days in bed from all other causes combined.

The predominance among infectious diseases of those transmitted through the nasopharynx challenges public health measures of control. Until the purity of our common air supplies can be established through sanitary control, the transmission of these diseases by air cannot be disproved.

(To be continued)

18. Smith, Theobald: Parasitism and Disease, Princeton, N. J., Princeton University Press, 1934.

19. Britten, R. H.: Important Causes of Sickness and Death, Pub. Health Rep. **51**: 947 (July 17) 1936.

Acetylcholine.—The results of the experiments of Dale and Gaddum lacked only the direct proof of the substance produced by nerve stimulation. This proof has been given lately by Kibjakow for the antidromic fibers and by Feldberg for the antidromic and the chorda fibers. Both investigators independently found that by stimulation of the respective nerves a substance passes into the circulating fluid which shows a vasodilator effect as well as other properties of acetylcholine.—Loewi, Otto: The Humoral Transmission of Nervous Impulse: The Harvey Lectures, Baltimore, Williams & Wilkins Company, 1934.

SCOPOLAMINE-MORPHINE SEMINARCOSIS WITH MODIFICATIONS

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In 1915 a symposium on so-called twilight sleep was held before the St. Louis Medical Society. Tilles [1] reported his experience in eleven private cases in which he used scopolamine-narcofine. Gellhorn and Kerwin [2] reported fifteen City Hospital and three private cases, having employed Siegel's modification of Gauss's method. Schwarz [3] presented fifteen cases together with an experimental and clinical study of scopolamine-narcofine seminarcosis.

Early in 1919 Dr. Henry Schwarz [4] presented the first thousand cases of delivery in Barnes Hospital. Since this time various other publications from the St. Louis clinics have come out as more cases have been observed. In 1929 there were 4,212 cases reported from Barnes and St. Louis Maternity hospitals, making a total number of 8,166 deliveries that were analyzed up to Feb. 15, 1929, scopolamine-morphine having been used in 4,113 of the deliveries. Only 7,166 of the foregoing are included in table 1, which shows the distribution of the cases and the fetal mortality.

TABLE 1.—*Distribution of Cases and Fetal Mortality*

Class	Semi-narcosis	Number of Cases	Still-born	Macer-ated	Died in Hos-pital	Total Mor-tality	Per Cent
White							
Primiparas	With	1,916	23	5	17	45	2.3
Multiparas	With	1,336	14	1	13	28	2.09
Negro							
Primiparas	With	339	10	1	3	14	4.1
Multiparas	With	129	4	2	3	9	6.9
Total.....	With	3,720	51	9	36	96	2.6
White							
Primiparas	Without	669	15	7	10	32	4.7
Multiparas	Without	2,064	21	17	26	64	3.1
Negro							
Primiparas	Without	271	9	3	8	20	7.3
Multiparas	Without	442	11	13	4	28	6.3
Total.....	Without	3,446	56	40	48	144	4.1
Grand total...	All types	7,166	107	49	84	240	3.3

In 1915, when Gauss's method was being investigated, animal experimentation was carried on in the pharmacologic laboratories of the Washington University School of Medicine to determine the effects of the various opium alkaloids and scopolamine on heart and respiration before the drugs were employed in a routine clinical way.

These experiments showed that scopolamine in doses much larger than were ever recommended for twilight sleep has no material effect on blood pressure or respiration. Also that the interference of the opium alkaloids (morphine, narcotine, and morphine-narcotine meconate) with the respiration in the new-born child is twofold; first the respiratory center is depressed, and in the second place there is bronchoconstriction.

We have been using scopolamine hydrobromide in ampule form with morphine sulfate in one-sixth grain (0.01 Gm.) doses for the induction of twilight sleep. Various other preparations in tablet form have been tried out but this is most convenient and uniformly active pharmacologically.

We use scopolamine-morphine seminarcosis as a first stage measure and begin it when the patient is in active labor, usually determined by an obliterating cervical canal. In the hands of the less experienced it may best be started when the uterine contractions are strong and occur at regular intervals and usually when there is at least two fingers' dilatation in the primiparous patient. In the multiparas, the procedure is usually begun with the first regular contractions that are painful.

The method as first employed has stood the test and has not been found wanting in more than twenty years of its use. The patient undergoes the usual preparation for delivery before the seminarcosis is begun. The dosage of the various drugs has remained the same with but minor changes in the hands of various individuals. The initial injection contains morphine one-sixth grain (dilaudid hydrochloride at times), and scopolamine hydrobromide $\frac{1}{133}$ grain (0.5 mg.), the former never being repeated. The interval of injections has gone unchanged, forty-five minutes elapsing between the first and second and the second and third injections, and from that point on the dosage is determined by the patient's loss of coordination and depth of seminarcosis.

When the seminarcosis is intensified to general anesthesia by a general anesthetic at the time of delivery, great care must be exercised to prevent the giving of too much anesthetic. Chloroform administered properly in the normal patient is almost ideal. From ten to fifteen drops of chloroform on a thin gauze mask is usually sufficient to render the patient completely relaxed. There is an inclination toward giving too much chloroform, and by so doing the mother is not only chloroformed to a much deeper degree than the occasion demands but the fetus is also chloroformed so deeply that it is bound to be born apneic, to become asphyxiated and to require resuscitation. Ether, nitrous oxide and ethylene are also used at the time of delivery as the case demands.

Morphine seminarcosis is most applicable during the first stage of labor, particularly in the primiparous patient or in the multiparous patient in whom previous repair work has been done on the cervix, or in whom the first stage is protracted and painful because of premature rupture of the membranes or a long rigid cervix. In cases of delivery through the natural passages in women who on a previous occasion have been delivered by abdominal cesarean section, it is of the greatest importance to prevent all straining on the part of the parturient woman and to extract the child as soon as dilatation is completed, so as to keep all strain as far as possible from the uterine scar. In cases of pulmonary tuberculosis and in cardiac disease, seminarcosis is also successfully used.

We may say here that after the method was employed in the first 150 to 200 cases it was felt that it was a procedure without appreciable danger to mother or child and that it had no marked effect on the prolongation

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Tilles, R. S.: J. Missouri M. A. **12**: 530-533, 1915.
2. Gellhorn, G., and Kerwin, W.: J. Missouri M. A. **12**: 533-541, 1915.
3. Schwarz, O. H.: J. Missouri M. A. **12**: 541-543, 1915.
4. Schwarz, Henry: Am. J. Obst. & Gynec. **79**: 46, 1919.

of labor. In previous papers we[5] have demonstrated the fact that it had a definite tendency to shorten the first stage and slightly lengthen the second stage. In order to meet the criticism that under scopolamine-morphine seminarcosis more forceps deliveries are necessary, we observed a series of thirty-four consecutive primiparas. During this period there were two or three patients delivered instrumentally for definite indications on the part of the mother or child, but such cases will be found in any series regardless of the anesthesia or analgesia employed. We do not feel that there is any particular end to be gained in permitting with a moderately contracted pelvis. We did not at any time expect to show any brilliant statistical figures to point out the advantages of the method but felt that it was particularly indicated under such special circumstances.

In our previous papers we have stated that there are no disadvantages of the method to either mother or child, although the mother in some instances is somewhat restless during the pain and occasionally somewhat excitable. However, we know of no method which by such a simple procedure as two or three hypodermic injections can result in such complete amnesia over such

TABLE 2.—*Composite of the First Two Thousand, the Second Two Thousand and the Total of the Two Series*

	Primiparas			Multiparas			Totals			Stillborn			Macerated			Died			Total			Percentage			Corrected Percentage (Macerated Excluded)		
Service	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total	1st 2,000	2d 2,000	Total
Without																											
Ward	209	278	487	407	209	616	616	487	1,103	13	7	20	5	7	12	4	6	10	22	20	42	3.6	4.1	3.8	2.8	2.7	2.7
Private	78	30	108	229	56	285	307	86	393	4	2	6	3	1	4	1	1	2	8	4	12	2.6	4.7	3.1	1.6	3.5	2.0
Total	287	308	595	636	265	901	923	573	1,496	18	9	26	8	8	16	5	7	12	30	24	54	3.3	4.2	3.6	2.4	2.8	2.5
Morphine, scopolamine																											
Ward	283	382	665	86	70	156	369	452	821	5	4	9	2	1	3	7	1	8	14	6	20	3.8	1.3	2.4	3.3	1.1	2.1
Private	315	329	644	263	99	362	578	428	1,006	5	1	6	2	1	3	5	5	10	12	7	19	2.1	1.6	1.9	1.7	1.4	1.6
Total	598	711	1,309	349	169	518	947	880	1,827	10	5	15	4	2	6	12	6	18	26	13	39	2.7	1.5	2.1	2.3	1.3	1.8
Dilaudid, scopolamine																											
Ward	0	149	149	4	30	34	4	179	183	0	1	1	0	0	0	0	1	1	0	2	2	0	1.1	1.1	0	1.1	1.1
Private	0	38	38	0	8	8	0	46	46	0	0	0	0	0	0	0	1	1	0	1	1	0	2.2	2.2	0	2.2	2.2
Total	0	187	187	4	38	42	4	225	229	0	1	1	0	0	0	0	2	2	0	3	3	0	1.3	1.3	0	1.3	1.3
Sodium amytal, scopolamine																											
Ward	0	45	45	4	19	23	4	64	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Private	0	58	58	13	30	43	13	88	101	0	0	0	0	2	2	0	0	0	0	2	2	0	2.3	2.0	0	0	0
Total	0	103	103	17	49	66	17	152	169	0	0	0	0	2	2	0	0	0	0	2	2	0	1.3	1.2	0	0	0
Pentobarbital sodium, scopolamine																											
Ward	0	120	120	2	17	19	2	137	139	0	1	1	0	0	0	0	0	0	0	1	1	0	0.7	0.7	0	0.7	0.7
Private	0	12	12	0	4	4	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	132	132	2	21	23	2	153	155	0	1	1	0	0	0	0	0	0	0	1	1	0	0.7	0.7	0	0.7	0.7
Allylisopropyl																											
Ward	8	1	9	44	5	49	52	6	58	No deaths																	
Private	No cases																										
Allylisopropyl with scopolamine																											
Ward	2	0	2	3	0	3	5	0	5	No deaths																	
Private	No cases																										
Sodium alurate, scopolamine																											
Ward	No cases																										
Private	0	7	7	0	4	4	0	11	11	No deaths																	
Quinetherol*																											
Ward	31	0	31	14	0	14	45	0	45																		
Private	2	0	2	3	0	3	5	0	5	No deaths																	
Total	33	0	33	17	0	17	50	0	50																		
Grand total																											
Ward	533	975	1,508	564	350	914	1,097	1,325	2,422	18	13	31	7	8	15	11	8	19	36	29	65	3.3	2.2	2.7	2.6	1.6	2.1
Private	395	474	869	508	201	709	903	675	1,578	9	3	12	5	4	9	6	7	13	20	14	34	2.2	2.1	2.2	1.7	1.5	1.6
Total	928	1,449	2,377	1,072	551	1,623	2,000	2,000	4,000	27	16	43	12	12	24	17	15	35	56	43	99	2.8	2.2	2.5	2.2	1.6	1.9

* Quinetherol contains ether 75 cc., quinine alkaloid 1.3 Gm., alcohol 12 cc., and liquid petrolatum to make 120 cc.

spontaneous delivery; we employ perineal forceps and episiotomy incisions in the primiparas almost as a routine. After we had derived a considerable experience from these cases we felt that it had its greatest usefulness in cases in which labor was likely to be prolonged, particularly in elderly primiparas and in patients a considerable period that it enables at least 80 to 85 per cent of these patients to go through labor without its recollection. Fetal asphyxia is not increased, although children are occasionally born in a state of oligopnea, from which usually they promptly recover on appropriate stimulation.

The disadvantages are chiefly from the standpoint of the attendants. Some one must be constantly with the patient, particularly the one who is supervising the injections. It may be said that much of our success with the method has been due to the untiring efforts of our house officers during this period of twenty years. They have seen to it that the patients whom they have handled have suffered no unnecessary pain during their labor by the careful supervision of this method. The other disadvantage is the not infrequent restlessness and occasional excitability of the patient. That is,

5. Krebs, O. S., and Wilson, L. R.: Scopolamine-Morphine Seminarcosis in the Second Thousand Deliveries in Barnes Hospital, J. Missouri M. A. **20:** 12 (Jan.) 1923; abstr. Proceedings of the Washington University Medical Society, J. Missouri M. A. **19:** 240, 1922. Krebs, O. S., and Schwarz, O. H.: Scopolamine-Morphine Seminarcosis, with a Report of Its Use in the Third Thousand Deliveries in Barnes Hospital, J. A. M. A. **81:** 1083 (Sept. 29) 1923; Scopolamine-Morphine Seminarcosis, with Report of Fourth Thousand Deliveries in Barnes Hospital, Am. J. Surg. **39:** 98-103 (Oct.) 1925. Krebs, O. S.: Scopolamine-Morphine Seminarcosis: Its Use in the First Thousand Deliveries in the St. Louis Maternity Hospital, read before the St. Louis Medical Society, April 30, 1929. Krebs, O. S.: Scopolamine-Morphine Seminarcosis, J. Missouri M. A. **26:** 485 (Oct.) 1929 (read in the symposium on obstetrics at the 72d Annual Meeting of the Missouri State Medical Association, Springfield, May 13-16, 1929).

however, by no means striking. It has no effect on the patient herself but at times is quite taxing to the attendant.

In the last few years, with the increasing popularity of the barbituric acid derivatives, various of these preparations have been used with scopolamine hydrobromide and morphine usually preceding the latter drugs in administration. In many instances the results were so gratifying for several reasons that the use has been extended. In the first place there seems to be less excitability evidenced in the patient, which has been one of the sources of dissatisfaction that we have found occasionally when employing our original technic. Scopolamine hydrobromide has been administered in the primiparas when active labor has begun and when there has been about two fingers' dilatation. We find that we now can keep the patient quite comfortable during the prodromal stages prior to the time we ordinarily start the seminarcosis and that the latter takes hold more quickly in spite of active labor. The latter fact has led us frequently to reduce the amount of morphine or other opiate in our first injection of so-called twilight sleep or even to discontinue its use entirely and has also improved the amnesia in multiparas advanced in labor on entering the hospital. The omission of the opium alkaloids, which drugs Jackson in 1915 held as likely to interfere with the prompt establishment of respiration in the new-born child, has had a definite result in the lessened number of apneic babies born. A separate report on this feature in a series of 1,000 cases is being prepared by Dr. Wulff for publication at this time.

To show the increasing incidence of the use of these barbiturates, we have analyzed the first 2,000 cases since our last report in 1929 and also the most recent 2,000 deliveries up to Jan. 1, 1936. There remain approximately 6,000 deliveries between these two groups that have not been studied.

In this first series of 2,000 cases there were 951 deliveries in which scopolamine hydrobromide and opiates were employed, 923 instances in which scopolamine hydrobromide was not used, and 126 cases in which there was a combination of scopolamine hydrobromide and other drugs. Scopolamine hydrobromide was used either with or without opiates 1,027 times.

In the second group of 2,000 cases there were 1,105 deliveries in which scopolamine hydrobromide and opiates were employed, 573 instances in which scopolamine hydrobromide was not used and 322 cases in which there was a combination of scopolamine hydrobromide and other drugs. Scopolamine hydrobromide was used in 1,427 deliveries. Although scopolamine hydrobromide was used in 350 more cases in the second series, it was used with opiates 154 more times, which shows not a decreasing use of scopolamine-morphine for other drug combinations but rather an extension of the use of scopolamine hydrobromide with other drugs, owing to its wider applicability. This additional use of scopolamine hydrobromide was in the primiparas, generally speaking. There was a total of 1,072 and 551 multiparas in the first and second groups, respectively, and the incidence of scopolamine hydrobromide was 436 (41 per cent) and 286 (51 per cent), respectively. At the same time, the frequency of primiparas was 928 and 1,449 in the first and second groups, respectively, with the employment of scopolamine hydrobromide in 641 (69 per cent) and 1,141 (79 per cent), respectively.

The corrected mortality figures in the first 2,000 cases in infants weighing 2,500 Gm. or over at birth and excluding macerated fetuses was 2.3 per cent with scopolamine-morphine and 2.4 per cent without scopolamine-morphine, and there was no mortality in 126 cases in which scopolamine hydrobromide was used in combination with other drugs, not including opiates.

In the second group of 2,000 deliveries the corrected mortality with scopolamine-morphine was 1.3 per cent, without scopolamine-morphine 2.8 per cent, and 0.3 per cent in which scopolamine hydrobromide was used with other drugs, not including opiates.

TABLE 3.—*Distribution of Patients and Fetal Mortality in Collective Groups in Which Scopolamine Hydrobromide Was Used with Opiates and with Barbiturates*

	Service	Primiparas	Multiparas	Total	Stillborn	Macerated	Died	Total	Percentage	Corrected Percentage
Without scopolamine (37.5%)	Ward	487	616	1,103	20	12	10	42	3.8	2.7
	Private	108	285	393	6	4	2	12	3.1	2.0
	Total	595	901	1,496	26	16	12	54	3.6	2.5
Scopolamine with all other drugs (62.5%)	Ward	1,021	298	1,319	11	3	9	23	1.7	1.5
	Private	761	424	1,185	6	5	11	22	1.9	1.4
	Total	1,782	722	2,504	17	8	20	45	1.8	1.5
Opiates with scopolamine	Ward	814	190	1,004	10	3	9	22	2.2	1.9
	Private	682	370	1,052	6	3	11	20	1.9	1.6
	Total	1,496	560	2,056	16	6	20	42	2.0	1.8
Barbiturates with scopolamine	Ward	176	94	270	1	0	0	1	0.4	0.4
	Private	77	51	128	0	2	0	2	1.6	0.0
	Total	253	145	398	1	2	0	3	0.8	0.3
Quinetherol	Ward	31	14	45	0	0	0	0	0.0	0.0
	Private	2	3	5	0	0	0	0	0.0	0.0
	Total	33	17	50	0	0	0	0	0.0	0.0

In the combined series of 4,000 cases, the corrected mortality without scopolamine hydrobromide was 2.5 per cent, with scopolamine hydrobromide and opiates 1.8 per cent, scopolamine hydrobromide with all drugs 1.5 per cent and scopolamine hydrobromide with barbiturates 0.3 per cent.

Table 3 shows the distribution of the patients and the fetal mortality in collective groups in which scopolamine hydrobromide was used with opiates and with the barbiturates.

CONCLUSIONS

1. The methods for the conduct of labor as we use them can be carried out only by trained obstetricians in a maternity of moderate size. The same general conduct of seminarcosis in labor has been employed for twenty years with satisfactory results.

2. Scopolamine-morphine seminarcosis has found increased employment in the last cases reported, together with an increasing application of scopolamine hydrobromide with barbiturates.

3. From analysis of the records, we feel definitely that scopolamine-morphine seminarcosis is in no way increasing fetal mortality.

4. With the addition of barbituric acid derivatives to our original method of seminarcosis, the use has been extended.

5. It seems that an almost ideal method is possible in our hands in the use of barbiturates with scopolamine hydrobromide alone or with a reduced dosage of opiate.

6. The method should not be used to the exclusion of other methods of analgesia and anesthesia but should be used in combination with them.

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PENTOBARBITAL-SODIUM AND SCOPOLAMINE HYDROBROMIDE

THREE YEARS' EXPERIENCE WITH THESE DRUGS IN OBSTETRICS AT THE EVANSTON HOSPITAL

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We began using pentobarbital-sodium and scopolamine hydrobromide for the relief of pain in labor at the Evanston Hospital in December 1932. Dr. Frederick C. Irving at the Boston Lying-in Hospital had been using these drugs for some time and with such satisfactory results that we were convinced of their superiority. One of us visited Dr. Irving in December 1932 and received from him and his colleagues all the information then available on the procedure of administering the drugs.

In February 1935 one of us, with Dr. Philip H. Smith,[1] published a report based on the study of 500 deliveries in which pentobarbital-sodium and scopolamine hydrobromide had been used. At that time we came to the conclusion that our results with this method of pain relief in labor had been sufficiently satisfactory to warrant its further use.

We have now used these drugs almost exclusively for three and one-half years in cases in which we wished to furnish relief of pain otherwise than with gas. We present here a report on the fetal mortality, the maternal mortality and morbidity, and the reaction of the patients based on letters received from a questionnaire. The records of the past three years during which pentobarbital-sodium and scopolamine hydrobromide were being used will be compared with the three years just preceding.

During the three year period that ended Nov. 1, 1935, we delivered 2,275 mothers and the drugs were administered in 1,415 cases, or 62 per cent. One can readily see that these drugs are not used as a routine. We have, however, used almost no other drugs for the relief of pain. If a patient reaches the ward in rapid labor, gas is used both for analgesia and for anesthesia, and nitrous oxide for the former and ethylene for the latter. The other contraindications for the use of pentobarbital-sodium and scopolamine hydrobromide are (1) full stomach, (2) infection of the upper respiratory tract, (3) prematurity and (4) heart disease. The contraindications, however, have not been strictly followed, as can be easily seen from the content of some of the case reports.

When the patient is in labor, regardless of the amount of dilatation of the cervix, she is given 7½ grains (0.5 Gm.) of pentobarbital-sodium in five separate capsules with a pin hole in each. The earlier it is administered the better. One must be satisfied, however, that one is dealing with true labor. The drug is not given in one capsule because we have found that it was not so effective, a fairly insoluble mass being formed at times when in contact with the hydrochloric acid of the stomach. About five minutes later the patient is given half a drachm (2 Gm.) of sodium bicarbonate in water to help alkalize the stomach. When the pentobarbital-sodium is given, scopolamine hydrobromide, 1/150 grain (0.0004 Gm.), is administered by hypodermic injection. Some patients who are smaller than average receive only 6 grains (0.4 Gm.) of pentobarbital-sodium. The initial dose, however, should be large, for one is administering an anesthetic and the patient must pass quickly through the excitement stage and then be kept there by an additional 1½ grain (0.1 Gm.) capsule every two to three hours. This additional amount is necessary because the drug is constantly oxidized in the body. The initial dose for large women is 9 grains (0.6 Gm.). We pay little attention to the ordinary restlessness that comes with the pain except to prevent injury. The labor bed must be extra large, with crib sides covered with padding. Nurses are instructed to handle the patient as little as possible. Every patient has a special nurse assigned as soon as the pentobarbital-sodium and scopolamine hydrobromide are given and the nurse must not leave the bedside until about five hours after delivery.

If the patient becomes restless not only with the pain but also between pains and if her restlessness seems extreme, a little more pentobarbital-sodium may be administered, but never over 3 grains (0.2 Gm.) additional. Then, if she is still restless, no other drugs are administered. Morphine and other narcotics should almost never be administered to such patients until after the third stage of labor. Such cases should be recognized early as failures from the standpoint of anesthesia; nature should be allowed to take its course, and the actions and cries of the patient should be disregarded. The uterus will eventually empty itself. Grave mistakes are sometimes made by going from one course of procedure to another in an attempt to relieve pain. A few examples are shown in the reports covering obstetric fetal mortality. Relief of pain in obstetrics is only one small part of the proper conduct of such cases. A simple effective method should be tried when indicated but abandoned when it fails.

There has recently been published a method of pain relief in labor in which five different drugs are given to the patient within a few hours, by mouth, by hypodermic and by rectum, combining narcotics, a hypnotic and a uterine stimulant. Then, during delivery, gas is used. Such polypharmacy for the relief of pain in obstetrics seems unnecessary and unreasonable.

In a few cases we have repeated the scopolamine hydrobromide after from four to six hours with very good effects. We have not used rectal instillation of ether except in a few early cases, deeming it unwise to proceed too far with too many drugs.

When the patient is ready for delivery she is given ethylene, put to sleep, prepared, draped and delivered.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Galloway, C. E., and Smith, P. H.: Study of Nembutal (Pentobarbital-Sodium) and Scopolamine for Relief of Pain in 500 Deliveries, Am. J. Obst. & Gynec. **29**: 207-215 (Feb.) 1935.

Outlet forceps and episiotomy is the choice procedure for delivery, 20 per cent being spontaneous, with the usual small number of breech and other operations.

If after the patient reaches her bed she is restless in coming out of the gas, she may be given one-sixth grain (0.01 Gm.) of morphine hypodermically and generally with good results. During this period especially, the patient should be kept warm and fluids and nourishment should be provided. She is generally able to drink long

TABLE 1.—*Operative Incidence in Relation to Maternal and Fetal Mortality*

Evanston Hospital	1930	1931	1932	1933	1934	1935
Labors	981	843	738	686	735	854
Spontaneous	57.1	54.8	48.4	41.3	37.4	35.2
Operative	42.9	45.1	51.1	58.7	67.6	64.8
Maternal deaths	2	1	1	0	1	0
Maternal mortality	0.20	0.11	0.13	0	0.13	0
Gross fetal mortality	4.1	3.0	2.8	3.6	3.0	4.03

TABLE 2.—*Maternal Morbidity*

	1933	1934	1935	Average 3 Years
Total labors	686	735	854	
Cases with pentobarbital-sodium	301	518	596	
Pentobarbital-sodium used	43.8%	70.4%	69.4%	
Morbidity rate				
Without pentobarbital-sodium	6.4%	7.3%	5.0%	6.1%
With pentobarbital-sodium	6.9%	5.1%	4.0%	5.08%

before complete consciousness is reached and should be persuaded to do so. A few patients become rather spastic and respirations become shallow. We have used coramin in such cases and one-sixth grain of morphine hypodermically with very good results. We now have picrotoxin to counteract the effects of barbiturate poisoning but we are not in a position to report on its use. There have been a few cases in which spasticity and shallow respirations have occurred during labor and here too we have deemed it wise to make the exception and have used a small dose of morphine with coramin, with good results.

Table 1 shows the operative incidence compared with maternal and fetal mortality. The increase in the use of outlet forceps and episiotomy has evidently not influenced either maternal or fetal mortality.

The following is a short account of the only maternal death that has occurred during the three year period covered in this study, a rate of 0.07 per cent in a series of 1,415 deliveries for which pentobarbital-sodium was given:

Mrs. L., a primipara, aged 36, was in labor thirty hours with no progress; 10½ grains (0.7 Gm.) of pentobarbital-sodium had been administered sixteen hours previously. Low cervical cesarean section was done, with severe hemorrhage four hours later. Death occurred shortly afterward.

One of the much used generalizations regarding anesthetics in obstetrics is that they will increase morbidity. Table 2 compares the morbidity rate of the group in which pentobarbital-sodium and scopolamine-hydrobromide were administered, with the rate of the group delivered without these drugs over the last three-year period. In all the following figures on morbidity the standard of the American College of Surgeons was used and includes only febrile morbidity.

Table 3 shows a comparison of the two three-year periods from the standpoint of morbidity. Then, thinking that since cesarean section furnishes such a high febrile morbidity rate we should eliminate all sections, we have shown this comparison also.

Since the group of 500 cases that were used in our preliminary study are included in these figures, we take the liberty to show table 4, which includes a more detailed description of the morbidity in that group.

Table 5 covers the fetal mortality for the past six years, and, since the obstetric mortality shows a slight increase during the period when pentobarbital-sodium and scopolamine hydrobromide were used, we separated the charts, and in table 6 is given the fetal mortality of the group in which the mothers received these drugs.

A more detailed description of the twenty-two unavoidable deaths is given in table 7 and a detailed description of the nine cases of obstetric mortality follows.

OBSTETRIC FETAL MORTALITY

CASE 1.—A baby, weighing 8 pounds 2½ ounces (3.700 Gm.), was born after a difficult labor of sixteen hours, the second stage lasting five and one-half hours. The mother received pentobarbital-sodium 6 grains (0.4 Gm.), and scopolamine hydrobromide 1/150 grain (0.0004 Gm.), at 1:45 a. m.; pentobarbital-sodium 1½ grains (0.1 Gm.) at 3 o'clock and again at 7:30, a combination of thymus extract and hypophysis extract, 3 minims (0.2 cc.) at 2:35 p. m., and at 3:40 there was a large brown emesis during the anesthetic; the mother became cyanotic and carbon dioxide oxygen was given. The baby was delivered at 3:45. Resuscitation was difficult; respirations were shallow, rapid and irregular; breathing was of the abdominal type and spastic. The clinical diagnosis was cerebral hemorrhage (severe). The baby died in thirty-six hours. The postmortem diagnosis was asphyxia neonatorum.

CASE 2.—Stillbirth resulted after a twelve hour labor. The baby was large. The pelvis was small and it was a very hard midforceps delivery, much difficulty being encountered with the shoulders. The weight was 9 pounds 12¾ ounces (4,445 Gm.).

TABLE 3.—*Comparison of Two Three-Year Periods: Morbidity*

	1930-1932 Before Pentobarbital-Sodium	1933-1935 After Pentobarbital-Sodium
Total labors	2,562	2,275
Cases of morbidity	185	137
Percentage of morbidity	7.2	6.0
Total labors less sections	2,445	2,178
Total morbidity cases less sections	139	98
Percentage of morbidity less sections	5.6	4.4

TABLE 4.—*More Detailed Description of Morbidity*

Total cases reported (February 1935)		500
Number showing fever (American College of Surgeons standard)		20
Percentage of total		4
Primiparas		16
Multiparas		4
Operative delivery		19
Spontaneous		1
Cause of fever:		
Pelvic infection	10	
Respiratory infection	3	
Hematoma of perineum	2	
Mastitis	2	
Admitted with pyelitis	1	
Admitted with phlebitis	1	
Pyelitis post partum	1	
Total	20	

The postmortem diagnosis was laceration of the tentorium and pulmonary atelectasis. The mother received pentobarbital-sodium 7½ grains (0.5 Gm.) and scopolamine hydrobromide 1/150 grain at 3:15 a. m.; pentobarbital-sodium 1½ grains at 4:50; a combination of thymus extract and hypophysis extract 3 minims at 6:40, and the baby was delivered at 11:40.

CASE 3.—This was a low cervical cesarean section. There was no engagement after twenty-four hours of labor. The pelvis was generally contracted. The mother received pentobarbital-sodium 7½ grains and scopolamine hydrobromide 1/150 grain at 12:30 p. m.; pentobarbital-sodium 1½ grains at 1:30, 2 o'clock, 4 o'clock and again at 7:30; morphine sulfate one-

fourth grain (0.015 Gm.) at 9:35, atropine sulfate 1/150 grain at 7:20 a. m. and morphine sulfate one-sixth grain at 8:10. From 4:30 to 9:30 p. m. on the previous day 16 ounces of ether had been given by inhalation for attacks of pain. At 9 a. m. the baby delivered, weighing 7 pounds 14 ounces (3,573 Gm.). The postmortem anatomic diagnosis was high grade passive hyperemia and edema of the brain; ecchymotic hemorrhages of the thymus, pericardium and pleura, and cyanosis of all the thoracic and abdominal organs and of the skin of the surface of the body. The chief diagnosis was asphyxia neonatorum.

TABLE 5.—*Fetal Mortality for Six Years*

Evanston Hospital	1930	1931	1932	1933	1934	1935
Babies	993	848	745	692	745	864
Gross fetal mortality	4.1	3.0	2.8	3.6	3.0	4.03
Unavoidable	3.2	2.1	2.0	2.5	1.8	3.01
Obstetric mortality	0.9	0.9	0.8	1.1	1.2	1.02

TABLE 6.—*Fetal Mortality of Group in Which Mother Received Pentobarbital-Sodium*

	1933	1934	1935	Total
Pentobarbital-sodium	301	518	596	1,415
Gross fetal mortality	7, or 2.33%	11, or 2.1%	13, or 2.18%	31, or 2.19%
Unavoidable deaths	4, or 1.33%	8, or 1.54%	10, or 1.68%	22, or 1.55%
Obstetric mortality	3, or 1.0 %	3, or 0.57%	3, or 0.50%	9, or 0.64%

CASE 4.—Mrs. K., a primipara, three weeks overdue, was delivered of a baby 47 cm. tall. The patient was not toxic. Induction two weeks previously failed. Induction was again attempted with 2 ounces (60 cc.) of castor oil at 6 a. m., 10 grains (0.6 Gm.) of quinine at 7 o'clock and 5 grains (0.3 Gm.) at 7:30. She then received 3 minims (0.2 cc.) of solution of posterior pituitary at 10:45 and again at 11:10. A bag was "inserted" at 5:30 p. m. One third grain (0.02 Gm.) of a mixture of opium and alkaloids was given hypodermically at 8:05. The fetal heart tones were poor and the bag was taken out at 9:05. The mother received 3 minims of solution of posterior pituitary at 9:32 and pentobarbital-sodium 7½ grains at 11:50. At 5:45 a. m. the pulse was 80 and the cervix dilated only 3 cm. At 10 o'clock atropine 1/150 grain was given hypodermically and a low cervical cesarean section was done at 11:02. The uterus was packed; hemorrhage occurred at 2:40 p. m. The patient had a chill, which was treated by transfusion at 4 o'clock. The temperature was 102 F. and the pulse 120. The diagnosis was atelectasis.

CASE 5.—The baby was born at full term and weighed 6 pounds 5 ounces (2,864 Gm.); there was a premature rupture of the bag of waters. The baby was born dead. The fetal heart beat had been satisfactory fifteen minutes before. There was velamentous insertion of the cord.

CASE 6.—A primipara at term delivered a baby by breech presentation weighing 6 pounds 5 ounces (2,864 Gm.). A torn tentorium and brain hemorrhage were found.

CASE 7.—A primipara had a toxic thyroid and was in the hospital one month previously. The baby, weighing 5 pounds 7 ounces (2,467 Gm.), delivered spontaneously at full term after labor of nine and one-half hours, with episiotomy. The tentorium was torn.

CASE 8.—A primipara after induction delivered at term a baby weighing 8 pounds 4 ounces (3,742 Gm.), with persistent ductus arteriosus and hydronephrosis.

CASE 9.—A quartipara was seventeen days past the date due in her first pregnancy in eleven years. Induction with castor oil and quinine failed, July 8, 1933. Fairly hard contractions persisted on and off for three and one-half days. The patient was given a mixture of opium and alkaloids and sodium amytal on and off for relief. July 11 one-third grain of a mixture of opium and alkaloids was given hypodermically at 1 p. m. and 3 grains of sodium amytal at 9:30. July 12, 3 grains of sodium amytal was given at 12:30 a. m. and again at 2:55, one-sixth grain of a mixture of opium and alkaloids hypodermically at 10:40, 6 grains of pentobarbital-sodium at 11:15 and 1½ grains at 11:45. There was a rapid, unexpected delivery of a baby girl weighing 6 pounds 13 ounces (3,091 Gm.), at 12:15, a stillbirth. The baby did not breathe. The mother had a hemorrhage of 400 cc. after the third stage. The uterus was packed. Shock was treated by 500 cc. of acacia solution by vein and 1,000 cc. of Ringer's solution subcutaneously.

COMMENT

Of the foregoing nine cases classified as obstetric fetal mortality, we feel that cases 1, 3, 4, 8 and 9 were influenced by the administering of various drugs. Cases 1, 3 and 4, however, can probably more justly be laid to faulty obstetric judgment as well as to the incorrect use of pain-relieving drugs. Case 9 constitutes a poorly handled case from the standpoint of pharmacology. Certainly no obstetric patient should receive a combination of one-half grain (0.03 Gm.) of a mixture of opium and alkaloids, 9 grains (0.58 Gm.) of sodium amytal and 7½ grains (0.5 Gm.) of pentobarbital-sodium during the twenty-four hours preceding the birth of her baby. An autopsy was done in all nine cases. Case 8 is included in the mortality influenced by drugs, regardless of the observations made at autopsy, because the hydronephrosis was not severe and many babies are found with persistent ductus arteriosus. The combination of induction and anesthesia may have been the cause. We have used the same combination of procedures many other times without any untoward effect.

Pediatric experience with the use of pentobarbital-sodium and scopolamine hydrobromide has failed to develop any serious objection. The new-born infant of a mother to whom this anesthetic was administered presents a definite clinical picture so distinct that not infrequently the physician is able to state "pentobarbital-sodium" or "no pentobarbital-sodium" without knowledge of the facts. Such an infant is somnolent, flaccid and pale. A slowing of the heart rate to as low as from 80 to 90 beats per minute may occur. Respirations are shallow, there is little or no objection to handling, and vigorous crying is absent. The Moro reflex is partially suppressed. Indifference to the taking of fluids and to nursing is often present. External heat may be necessary to maintain a normal body temperature. Various degrees of this state exist, of course, depending on the dosage of the drugs and the time relative to delivery.

First contacts with such infants caused much pediatric alarm. Continued experience has shown that a normal, pink baby with a vigorous cry and usual

TABLE 7.—*Unavoidable Deaths*

Unavoidable Deaths	Cases	Autopsies
Under 7 months	5	4
Dead in utero before labor	7	7
Monsters	5	4
Influenza in mother; baby 35 weeks, icterus and pericarditis	1	1
Coaretation of aorta	1	1
Cord tumor; term; weight 4 lb. 9 oz.	1	1
7 months; placenta praevia; version; brain hemorrhage	1	1
Twin; version; pneumonia 17th day	1	1

TABLE 8.—*Extent of Weight Loss of New-Born Infants*

	Without Pentobarbital-Sodium, 100 Cases	With Pentobarbital-Sodium, 85 Cases
Average birth weight	7 lb., 4 oz.	7 lb., 6 oz.
Greatest loss, percent of birth weight	6.8	5.2
Home-going weight, per cent of birth weight	99.6	99.0

spasticity may be expected in from one to two days, comparable to other deep anesthesia. Personal communications from twelve pediatricians having the frequent opportunity of caring for babies at whose birth pentobarbital-sodium was used, asked if its effect was "such that it would cause us to decide to discontinue its use," were as follows: nine were favorable to its continued use, three were noncommittal, none were unfavorable. Factors mentioned were somnolence

TABLE 9.—*Incidence of Breast Feeding on Leaving Hospital*

	Without Pentobarbital-Sodium, 100 Cases	With Pentobarbital-Sodium, 85 Cases
Completely breast fed	37%	32%
Partially breast fed	43%	31%
Weaned	20%	37%

(eight), indifference to the taking of fluids and to nursing (five), bradycardia (four), pallor (three), flaccidity (two) and subnormal temperature (one).

One of us (R. B.) has studied random selections from his case records, seeking to determine the effect on the weight loss of the first few days of life and the relation of the home-going weight to the birth weight. No effect could be demonstrated, as summarized in table 8. He has also studied the incidence of breast feeding in "pentobarbital-sodium" and "no pentobarbital-sodium" infants, as presented in table 9. Apparently, infants born of mothers under this anesthetic stand a somewhat lesser chance of being breast fed. The difference, however, is very small. Perhaps the initial indifference to nursing may be a factor.

In February 1936 we sent letters to the last 500 women to whom we had given pentobarbital-sodium and scopolamine hydrobromide during labor and asked them to reply, stating their opinions of the procedure based on their own individual experience. We received 201 replies and we have tabulated their answers in table 10.

Of the three letters from those against the use of pentobarbital-sodium and scopolamine hydrobromide in labor, one came from a patient who received no benefit from the drugs whatever. She stated emphatically that the pains were so severe when she received the medication that she could not even see what color the capsules

TABLE 10.—*Questionnaire Sent to Patients*

Answers received	201
Enthusiastic	175
Given too late	18
No reaction from drugs	3
Noncommittal	2
Against its use	3

were and that they did not relieve her suffering. The second was from a mother having her second baby, who was disappointed because she did not awaken immediately after delivery to enjoy the sight of her new-born infant. The third objected to its use because the following day she was somewhat drowsy. Many of the letters that were received were from women who had had from three to six babies. A number from this group approved of this method of pain relief because it not only relieved the pains but enabled them to sleep and to escape the nervous shock which so often follows the delivery of the baby. They were of the opinion that rest and sleep following labor enabled them to recuperate much more quickly.

CONCLUSIONS

1. Pentobarbital-sodium and scopolamine hydrobromide were used to allay the pain of labor in 1,415 cases, with a maternal mortality of 0.07 per cent, a gross fetal mortality of 2.19 per cent, an obstetric fetal mortality of 0.64 per cent and a maternal morbidity rate of 5.08 per cent.
2. Maternal mortality and morbidity are not increased.
3. Infant mortality is not increased.
4. Fetal morbidity is increased if one considers the somnolence, flaccidity and bradycardia produced in the infant. This condition, however, has not led to an increase in fetal mortality.
5. The method was used in 62 per cent of the women admitted while this study was in progress. This method, in common with all methods of pain relief, is not universally applicable. Whether it should be given or withheld should be decided by the obstetrician.
6. Since constant and intelligent observation of the patient and baby are essential, it is a procedure for the well organized hospital only. It should not be used in the home.
7. The reaction of the patients toward the use of these drugs for relief of pain in labor seems quite favorable.
8. Our results with this method have been sufficiently satisfactory to warrant its further use.

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THE RELIEF OF LABOR PAINS BY THE USE OF PARALDEHYDE AND BENZYL ALCOHOL

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The ideal agent or combination for obtaining analgesia and amnesia during labor should be, first of all, safe for both mother and child. It should not unduly prolong labor and should give relief from pain early, as well as produce satisfactory analgesia and amnesia in a high percentage of cases. Moreover, it should be easily administered and adequately retained by the patient. Finally, it should be free from objectionable side actions, such as (*a*) excitement during the induction and recovery stages, (*b*) nausea and vomiting, (*c*) deleterious effects on the heart, liver, kidneys, lungs and respiratory center and (*d*) local damage to mucous membranes.

Further experience with a combination of paraldehyde and benzyl alcohol leads us to believe that such a mixture closely approaches this ideal and accomplishes more with fewer undesirable reactions than any other of the existing methods of relieving the pains of labor, thus confirming our preliminary report[1] presented about two years ago.

SALIENT CHARACTERISTICS OF THE DRUGS

Paraldehyde $(CH_3.CHO)_3$, a polymer of acetaldehyde $(CH_3.CHO)$, is a colorless liquid, soluble in

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1. Kane, H. F., and Roth, G. B.: Tr. Am. A. Obst., Gynec. & Abdomin. Surg., 1934, p. 201; Am. J. Obst. & Gynec. **29**: 336 (March) 1935.

water to about 10 per cent. It burns readily, has a disagreeable taste, possesses a characteristic pungent odor and is rather irritating to mucous membranes. However, it does not precipitate proteins unless contaminated with acetaldehyde. Its irritant action on mucous membranes is therefore probably due to its ready volatility and penetration into the loose tissues, thus resembling somewhat the volatile oils in this respect.

Pharmacologically it resembles ethyl alcohol rather closely but it is a more powerful narcotic than the corresponding primary alcohol. In small dosage (2 cc.) taken at the end of the day it acts as a hypnotic, but to secure this effect in an excitable nonpuerperal patient about an ounce (30 cc.) is required. The sleep that it produces closely resembles normal sleep; there are no marked after-effects and the sleep is usually refreshing. It was introduced into therapeutics as a hypnotic by Cervello in 1884.[2]

Paraldehyde is rapidly absorbed from mucous membranes, particularly when given undiluted and, less readily, when given in oils. Some of it is destroyed in the body, but the greater part is excreted as such by the lungs and kidneys, neither organ being damaged by it.

Benzyl alcohol ($C_6H_5.CH_2OH$) is an aromatic alcohol, an isomeride of cresol which occurs naturally in certain balsams and oleoresins. It is a colorless fluid possessing a pleasing odor, slightly soluble in water (about 4 per cent) and readily miscible with paraldehyde. The pure substance is irritant as well as anesthetic when applied to mucous membranes. It will precipitate proteins but in 1:10 dilution with paraldehyde does no damage to the tissues. It is about half as toxic as cresol, being rapidly eliminated in the urine as hippuric acid.

Macht,[3] who introduced benzyl alcohol into therapeutics as a local anesthetic in 1918, found that the drug itself could cause analgesia through its central action when used in large but safe amounts in experimental animals.

It is absolutely essential that only pure drugs be used. The paraldehyde should meet the requirements of the United States Pharmacopeia and the benzyl alcohol those of New and Nonofficial Remedies. Paraldehyde may be contaminated with acetaldehyde, which reduces its hypnotic action and which, by precipitating proteins, may cause local injury to tissues.

As the taste of paraldehyde renders it objectionable to the majority of patients, the oral route for administration is not serviceable. Neither paraldehyde nor benzyl alcohol is suitable for subcutaneous use, as necrosis is frequently produced when so given. Paraldehyde is only mildly irritant to mucous membranes, but in many cases the irritation is sufficient to cause its expulsion when given by rectum. To insure retention of the drug, benzyl alcohol is added for the purpose of anesthetizing the rectal mucosa until the paraldehyde shall have been absorbed. By this means one avoids dilution of the paralydehyde with oil, which adds to the bulk of the injection, delays absorption and is frequently not retained.

The earliest report of the use of paraldehyde as the basic amnesia-producing agent in labor was that of Rosenfield and Davidoff[4] in 1932. In 1934 Colvin and Bartholomew[5] presented a thorough analysis of a series of 100 cases in which the drug was employed. The former, however, preceded the injections of paraldehyde in oil by the oral administration of pentobarbital-sodium or sodium amytal; the latter used sodium amytal. To us it has seemed advisable to avoid the barbiturates, as we believe that they are more toxic, are more apt to cause excitement and add nothing of value which cannot be provided by paraldehyde. The recent report of Foote[6] on paraldehyde by rectum as a preanesthetic agent lends support to this belief. Comparing it with the barbiturates, he states: "It is safer, more rapid and certain in action, it can be used in bad risks, the postoperative state is quieter and the sleep more prolonged, complete amnesia is obtained and the sleep is refreshing."

PHARMACOLOGIC EXPERIMENTS ON UTERINE ACTIVITY

The main aspects of the pharmacology of paralydehyde have been described by Cervello[2] and others, summaries of which may be found in any standard textbook of pharmacology.

Nothing, however, seems to have been written about its effect on uterine motility. Accordingly we[7] made a study of its effect on both isolated and intact uteri and found that paraldehyde in comparatively concentrated solution (1:12,500) was stimulating to the excised uterus of the guinea-pig and without effect on the rabbit uterus, while a 1:5,000 solution was usually depressant to both longitudinal and cervical segments of either rabbits or guinea-pigs.

In the intact rabbit anesthetized with paraldehyde strong rhythmic uterine movements were present, being uninfluenced by 10 cc. of 8 per cent supplemental paralydehyde given intravenously.

Rhythmic uterine movements were obtained also in the paraldehyde anesthetized cat, but they are weaker than in the rabbit, a difference which was regarded as due to species rather than an effect of the drug.

Pronounced rhythmic movements were produced in the cat by a small amount of solution of posterior pituitary. When magnified in this manner the movements were uninfluenced by the intravenous administration of an 8 per cent solution of paraldehyde and only slightly depressed (mainly in rate) by doubling this quantity.

Benzyl alcohol was found to be somewhat more depressant to isolated uteri than was paraldehyde, the depression of the cervix usually occurring before that of the horn.

When benzyl alcohol was given intravenously to either rabbits or cats anesthetized with paraldehyde, it was without effect on the uterus in as high a dosage as 3 cc. of a 3 per cent solution.

When used in combination with paraldehyde on isolated uteri of the rabbit and guinea-pig, simple summation rather than potentiation of effect resulted.

From these studies they concluded that both paraldehyde and benzyl alcohol were but mildly depressant to uterine muscle, the former being less depressant than the latter.

2. Cervello, V.: Arch. ital. de biol. **6**: 113, 1884.
3. Macht, D. I.: J. Pharmacol. & Exper. Therap. **11**: 263 (April) 1918.
4. Rosenfield, H. H., and Davidoff, R. B.: New England J. Med. **207**: 366 (Aug. 25) 1932.
5. Colvin, E. D., and Bartholomew, R. A.: The Advantages of Paraldehyde as a Basic Amnesic Agent in Obstetrics, J. A. M. A. **104**: 362 (Feb. 2) 1935.
6. Foote, R. R.: Paraldehyde as a Preanesthetic, Brit. M. J. **2**: 278 (Aug. 10) 1935.
7. Roth, G. B., and Kane, H. F.: Proceedings of the American Society of Pharmacology and Experimental Therapeutics, 1936, annual meeting, Washington, D. C.

SAFETY

Paraldehyde is commonly stated to be the least toxic of the hypnotic drugs.[8] The amount herein recommended has been found to be the minimal effective dose.

Benzyl alcohol also is of low toxicity; moreover, the quantity which is employed in this mixture is so small that its general narcotic effect is negligible.

The mixture has been used in the presence of heart, liver and kidney disease as well as in normal cases, with no harmful effects noted. Although the odor of paraldehyde may be present for several days on the breath of the babies, they apparently are unaffected by the drug. When ethylene is used in the perineal stage of labor, no delay in the initiation of respiration has been noted. After delivery under ether, however, there has been a tendency to mild apnea, but never to a dangerous degree. It would seem that the combination of paraldehyde and ether is not ideal for the baby.

ADMINISTRATION EARLY IN LABOR

In most methods of pain relief, emphasis is placed on the withholding of analgesics until the cervix has reached a certain stage of dilatation or until the contractions have attained a frequency arbitrarily determined. The paraldehyde-benzyl alcohol mixture is given as soon as the patient complains of pain, without regard to the cervix, contractions, parity or condition of the membranes. Gwathmey and McCormick,[9] in their modification of Gwathmey's original method,[10] adopt the same plan.

EFFECT ON LENGTH OF LABOR

In estimating the length of labor, it has been necessary to disregard the usual division into first and second stages. In most instances one stage merges imperceptibly into the other, and frequently the bulging perineum has been the first indication of full dilatation of the cervix. Although laboratory experiments have shown that paraldehyde has little effect in various animals, clinically it seems to lengthen somewhat the intervals between pains. This lengthening seems to be beneficial, probably through allowing time for the fatigued muscle to recover its tonus.

The mixture of paraldehyde and benzyl alcohol apparently softens the cervix and hastens dilatation. These factors seem to be responsible for the impression that labor has been somewhat lengthened in some cases and shortened in others.

The average time between the first rectal instillation of the mixture and the appearance of the presenting part at the outlet has been, in primiparas, seventeen hours and forty-one minutes; in multiparas, eleven hours and fifty-five minutes.

The duration of labor in primiparas ranged from one to fifty hours; in multiparas, from one-half to twenty hours.

The number of rectal instillations given, per case, was from one to ten, the average being four in primiparas and two in multiparas.

RETENTION OF THE SOLUTION

Retention of the solution is practically always complete. When it is not retained it is almost certain evidence that the patient is in the second stage of labor with the presenting part low in the pelvis.

8. Miller, A. H.: Anesth. & Analg. **15**: 14 (Jan.-Feb.) 1936.
9. Gwathmey, J. T., and McCormick, C. O.: Ether-Oil Rectal Analgesia in Obstetrics, J. A. M. A. **105**: 2044 (Dec. 21) 1935.
10. Gwathmey, J. T.: New York State J. Med. **98**: 1101, 1913.

ANALGESIA AND AMNESIA

Ordinarily the patient, when once under the influence of the paraldehyde-benzyl alcohol mixture, sleeps quietly, perhaps turning and moaning with each contraction. In these cases analgesia is presumed to be complete. Some patients will seem to become fully awake at each pain, will talk lucidly and even complain of suffering. When this occurs there is evidently some impression on the brain, but after labor there is absolutely no recollection of what has taken place. As amnesia is complete, these cases are regarded as having been successful. A few women remember unrelated events, such as the first inhalations of gas, remarks made by the attendants, or catheterization, but seldom do they recall having suffered. When labor is of less than three or four hours' duration and of the tumultous type, one severe pain following another at intervals of two or three minutes, it must be admitted that the paralydehyde-benzyl alcohol mixture has little or no effect.

It is interesting to note that the patient may not go to sleep until after a second rectal instillation, but amnesia usually extends back to the first injection.

FREEDOM FROM OBJECTIONABLE SIDE ACTIONS

Excitement to the point of tossing about or requiring restraint always indicates that the dose has been insufficient, that the effect is wearing off, that the presenting part is approaching the perineum or, as is most frequently the case, that the rectum contains fecal matter which is interfering with absorption of the drugs.

Nausea and vomiting have not been noted from the use of paraldehyde-benzyl alcohol.

Laboratory experiments have shown, and clinical experience has confirmed the fact, that there are no deleterious effects on the heart, liver, kidneys, lungs or respiratory center. As paraldehyde is excreted largely through the lungs, it is perhaps contraindicated in the presence of pneumonia, but it has been used successfully in one case of active pulmonary tuberculosis. No patient has shown evidence of proctitis.

TECHNIC OF ADMINISTRATION

1. Of particular importance is the thorough cleansing of the lower part of the bowel and rectum with a soapsuds enema followed by irrigations with physiologic solution of sodium chloride until the return is absolutely clear.

2. The dose of paraldehyde is 1.2 cc. to each 10 pounds (4.5 Kg.) of the weight of the woman at the beginning of labor.

3. The dose of benzyl alcohol is always 1.5 cc. As the action of this drug is largely that of a local anesthetic, the dose does not vary with the weight of the patient.

4. To the required amount of paraldehyde is added 1.5 cc. of benzyl alcohol and the mixture is instilled by gravity into the rectum by means of a funnel and a large catheter, which is inserted for a distance of about 4 inches (10 cm.). As the solution disappears it is followed by not more than 30 cc. of physiologic solution of sodium chloride to wash out the catheter and distribute the drug. The bulk of the injection is so small that the instillation can be made between two contractions. While there is seldom any tendency for the patient to expel the solution, it is recommended that during at least two pains the buttocks be compressed and the patient be asked not to "bear down."

5. Paraldehyde-benzyl alcohol is given as soon as the patient complains of pain. The dose, and always the full dose, may be repeated if necessary, one and one-half hours after the first. As labor progresses it will be found that the effect of each successive injection is more lasting, the intervals between repetitions becoming three, four or five hours.

6. If the patient is awake one-half hour after the initial instillation of the rectal solution, one-fourth grain (0.015 Gm.) of morphine is given subcutaneously. It is rarely necessary to repeat the morphine, although in long labors it has occasionally been repeated with no apparent harm.

7. When several doses of the mixture are given, the rectum should be irrigated with physiologic solution of sodium chloride before each alternate instillation.

8. To minimize dehydration, a glass of orange juice or water should be given before each injection of paraldehyde-benzyl alcohol. The patient is usually capable of cooperation to the extent of drinking; otherwise dextrose, intravenously, may be given.

9. Since the patient is not conscious of bladder distention, catheterization is performed every eight hours.

10. Too much emphasis cannot be placed on the necessity for repeating the rectal injection when the patient begins to awaken, not after she has become restless.

CLINICAL OBSERVATIONS

The degree of success depends somewhat on the length of labor. In the case of a multipara, in labor for only one or two hours, this method of treatment is practically useless; to the primipara with a slowly progressing occiput posterior it gives complete relief. The fact that the patient is not suffering lessens the temptation to early and perhaps dangerous interference with labor.

Observation of these cases has strengthened the belief that the value of voluntary contraction of the abdominal muscles has been greatly overestimated. Although these women are not allowed to strain and pull on straps, the second stage of labor progresses as rapidly as in cases in which the patients attempt to cooperate.

TABLE 1.—*Results in Six Hundred and Eleven Cases Studied*

	Group A Amnesia and Analgesia	Group B Amnesia and Partial Analgesia	Group C Memory of Events, No Pain	Group D Memory of Some Pain	Group E Little or No Relief
Primiparas	240	99	5	3	9
Multiparas	108	72	24	13	38
Totals	348	171	29	16	47
Percentage	57	28	4.7	2.6	7.7

In certain cases, particularly in multiparas, it is possible to accomplish spontaneous delivery without a general anesthetic. As a rule, however, the patients are only semiconscious and it is difficult to maintain aseptic technic. Delivery by outlet forceps under a general anesthetic, preferably ethylene, is therefore recommended in cases which ordinarily would need no assistance.

Some methods of analgesia are said by their proponents to be safe for use in home deliveries. We feel, as do Irving and his associates,[11] that any person who has been rendered unconscious by drugs should constantly be under the observation of a trained attendant.

This method, we believe, should be administered in the home only when the physician is prepared to remain with the patient throughout the duration of labor.

RESULTS

In estimating the value of the paraldehyde-benzyl alcohol mixture as an agent for securing analgesia and amnesia, the cases have been separated into five groups. Group A consists of those patients who have slept quietly throughout labor. In group B are those patients who have moved about, at times seemed to be completely rational and complained of pain; amnesia, however, in this group is complete. The patients who remember unrelated events but no pain constitute group C. Those who remember having had some pain but whose suffering was greatly relieved are placed in group D. In group E are those who received no benefit from the method.

TABLE 2.—*Stillbirths and Neonatal Deaths*

Premature, 7 months or less	11
No fetal heart sounds heard before labor	2
Intracranial hemorrhage	4
Fetal heart sounds ceased during labor	3
Total	20
Percentage	3.3

Table 1 shows the results in the 611 cases that we have studied. More than 1,000 additional patients have been treated by other physicians according to the technic described in this paper. While statistics in these cases are not available, those who have observed them agree that the results as tabulated fairly represent their experience.

Complete relief from the memory of pain was accomplished in 89.7 per cent, partial relief in 2.6 per cent and no relief in 7.7 per cent. All but four of the patients in groups D and E were in labor less than four hours.

From table 2 it will be noted that there were 3.3 per cent of stillbirths and neonatal deaths; three, or less than 0.5 per cent, were from causes undetermined and may be charged to the method. However, since two such deaths had occurred in our preceding 1,000 cases before any anesthetic had been given, it is possible that the use of paraldehyde and benzyl alcohol may not have been the cause.

SUMMARY

1. The combination of paraldehyde and benzyl alcohol administered rectally produces complete amnesia without unduly prolonging labor in practically all cases in which labor is of more than four hours' duration, without causing ill effects on either mother or child.

2. The solution is retained without difficulty except when the presenting part is pressing on the rectum.

3. There have been no cases of proctitis or other evidence of local damage to tissue.

4. Excitability of the patient is present only when the technic of administration has not been properly carried out.

5. These women are not subjected to the fatiguing exertion of "bearing down" and pulling on straps; they are spared the psychic shock of pain; they have

11. Irving, F. C.; Berman, Saul, and Nelson, H. B.: Surg., Gynec. & Obst. 58: 1 (Jan.) 1934.

no memory of suffering, and they sleep quietly for from six to twelve hours after labor. As a result, they awaken actually refreshed.

6. Increased experience with this method of pain relief has shown that success depends largely on strict attention to the details of administration.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KREBS, WULFF AND WASSERMANN, DRS. GALLOWAY, GRIER AND BLESSING, AND DRS. KANE AND ROTH

DR. BUFORD G. HAMILTON, Kansas City, Mo.: The majority of women can be delivered safely without sedatives—probably most women would be in better condition if morphine were used judiciously. Women may be given sedatives and have no remembrance of their labor; unfortunately, this cannot be done in every case. The successful termination of labor depends on the management of each stage of labor. Sedatives do interfere when not properly supervised. That there is a close relation between sedation and intervention is well known. It is also known that intervention is exacting its toll of lives of American women. The point that concerns me is that I do not know the threshold of pain and that I cannot measure the force of pain. Measuring the dosage for each individual patient has been my problem. Two patients are given sedatives at what is considered the ideal time. Both deliver normally in four hours without any remembrance of pain. Later, two similar patients are treated in the same way only to be delivered artificially. I cannot think the patient was at fault but that it was the administration of sedatives. In discussing this situation with outstanding obstetricians I find that they have the same problems. One can only conclude that American obstetrics has become a competitive problem to please women instructed by lay magazines. Intervention because of fetal distress is a part of the picture. All have experienced these anxieties and have felt that sedatives produced the condition. For these reasons it would seem that our only honest promise to patients must be sedatives in such doses as will be safe for both the mother and her unborn child. The necessity of supervising all patients given sedatives must never be lost sight of, since obstetric success can be measured only by results.

DR. JOSEPH B. DE LEE, Chicago: I feel very decidedly that the magazines and the competitive practices of doctors have increased the fear of having a baby in the minds of the public. Anesthesia may be divided into anesthesia of the first stage, or analgesia, and anesthesia of the second stage. The first stage anesthetics or analgesics are morphine and scopolamine, so-called twilight sleep. The original twilight sleep is passé. Nobody uses that now because in the best of hands in Europe it showed an irreducible mortality of 1 per cent. I am going to take up the personal element in the use of drugs in order to produce a more or less painless labor. The success of all anesthetics depends on the doctor. Abnormal states of the mind can cause spastic conditions of unstriped muscular organs, such as the stomach, the heart and the colon. Why cannot the uterus be affected by the mind? Many patients are cured by faith in their doctor, and it makes little difference what medicine he gives. Hippocrates said "The physician amuses the patient while the gods cure him." The notorious Mr. Coué showed what could be done by faith and nature. Suggestion is a powerful adjunct to all our remedies and we doctors have let the cultists run away with it. I have not seldom prescribed 20 grains (1.3 Gm.) of sodium bromide for sleep, telling the patient that the effects of the powerful sedative would last two or sometimes three nights. Pure suggestion has made these women sleep through two or three nights. I always apply the psychologic laws of suggestion in my practice, and I have even employed hypnotism. One has to be careful in the use of hypnotism, especially to avoid catalepsy, which is very dangerous. Those who try hypnotism should remember to use posthypnotic suggestion. In Heidelberg some years age the experiment was made in the seventh month of pregnancy in which the woman was given intense suggestion of painless labor and that carried through until term. Suggestion is a matter of personality. Its success depends on faith. Faith is given to a doctor who has, as King Solomon said, an understanding heart. If one can bring the patient's mind into a proper evaluation of the nature and purposes of labor, the first stage can be conducted with a minimum of anesthetic agents, and it is not a far cry to say that perhaps contraction rings will be to a large extent eliminated, labor assuming a more normal course.

DR. JOSEPH L. BAER, Chicago: From the conclusions of the authors we must find that there is still much lacking in what they hope for from the methods they employ. If that is so, the method employed is to a definite degree defective. There is no doubt in my mind that beginning with the propaganda tour of Drs. Krönig and Gauss, publicized by *McClure's Magazine* twenty-odd years ago, there was infiltrated into American womanhood this demand for painless labor which has been timidly yielded to by the American medical fraternity. It behooves us to stem that tide in the interest of our obstetric patients and their babies. In Michael Reese Hospital ever since my connection with it a little over thirty years ago, the standard relief of women who need relief in labor has been morphine. Morphine still occupies, in my opinion, the front rank as an analgesic in labor. Over 50 per cent of all women in the United States are delivered in the home, and of those delivered in institutions only a very small group is in institutions sufficiently well regulated and sufficiently well nursed to warrant the application of these various methods with which we are all experimenting, and which require the maximum of constant medical and nursing care. Therefore, for American women in general we must still urge the safe, sane method of obstetric analgesia when indicated, and, I repeat, morphine offers that relief. Every woman in labor is a potential emergency major surgical risk wherever she may be. To mask her symptoms under the prolonged effect of powerful amnesic or analgesic agents and leave her to the observation of relatives or an inadequate hospital staff when she is a potential emergency major surgical risk I regard as culpable evasion of responsibility not justified by the clamor of the uninformed patient.

DR. RUDOLPH W. HOLMES, Chicago: I feel that an obstetric utopia will come when we shall have a drug which shall be utterly innocuous to mother and child, shall have no influence on the phenomena of labor, shall cause no interference with the intensity of contractions or their rhythmic course, and shall not rob the woman of those voluntary efforts which are so essential during the expulsive period of labor. Not one of the drugs which have been popularized of late meets these criteria. Some are highly inimical to mother or baby, or both, and all demand an excessive incidence of operative intervention. I have the misfortune to be among the first to bring scopolamine to the United States, in 1901. I employed it on various patients and with disastrous effects. Its wide exploitation in 1913 under the name of twilight sleep prompted me to try the drug again, for various pharmaceutical houses declared that the previous disasters were from the use of impure drugs. At this time I had documentary assurance that scopolamine was unobtainable. In view of the fact that the recovery of scopolamine from scopalus was so expensive, and in view of the fact that hyoscine was chemically, spectroscopically and physiologically identical in action to scopolamine, the only marketed product was hyoscine under the label of the former. In each trial I found numerous instances of the untoward effects, with fetal deaths greater than in other means of allaying pain. I feel that hyoscine in combination with morphine is just as great a menace today as it was in 1913. We all know that obstetric mortalities have not decreased in twenty years. Institutional deaths are essentially the same as they were 100 years ago. I have the results of a study comprising 240,000 births in 490 hospitals, with a total maternal loss of 0.8 per cent. The Rotunda Maternity a hundred years ago had a maternal loss of 0.9: this rate is infinitely less than that of some hospitals of modern times: 2 per cent, 4 per cent were not infrequent, and in one it was over 7 per cent. Modern obstetric practices have transferred, in comparison to the Rotunda figures, stillbirths to neonatal deaths, the net result being that fetal (infant) losses are as they were a hundred years ago. I cannot see that it is good obstetrics in a highly organized hospital to paralyze a parturient with drugs, subject her to the expense of engaging a special

nurse, and then perforce use operative interventions to the extent of 85 per cent of all labors.

DR. NICHOLSON J. EASTMAN, Baltimore: From a statistical point of view one can be readily convinced that the analgesic methods yield satisfactory results, since amnesia is produced in a substantial majority of the cases and since the end results, both for mother and for child, compare favorably with our best standards. We must, however, face squarely the fact that both barbiturate analgesia and scopolamine-morphine analgesia affect the infant profoundly. This statement is based on the following considerations: 1. Barbiturates pass rapidly from mother to fetus. In a dog or in a rabbit they are demonstrable in the fetus within fifteen minutes after they have been given to the mother. 2. In a series of Baltimore cases in which pentobarbital-sodium was given in doses of from 6 to 7½ grains (0.4-0.5 Gm.), the amniotic fluid was meconium stained in 16 per cent of the cases. In an additional series in which to the pentobarbital-sodium analgesia were added morphine, one-sixth grain (0.01 Gm.), and rectal ether, 75 cc., the amniotic fluid was meconium stained in 40 per cent of the cases. The end results in these infants were satisfactory, but the inference to be drawn from this high incidence of meconium stained amniotic fluid would seem clear enough. 3. Since the time of Ahlfeld it has been suspected that the fetus in utero makes respiratory movements, and Ahlfeld advanced the view that the onset of respiration occurs—at least the onset of respiratory movements—not at the moment of birth but sometime back in intra-uterine life just as the cardiac action does. During the past year, Snyder and Rosenfeld of our institution have demonstrated intra-uterine respiratory movements of the fetus in the rabbit, the cat, the dog, the guinea-pig and the monkey. These thoracic movements, which are clearly visible through the intact uterine wall, are rhythmic in character, of a rate between 20 and 60 per minute, and are obviously of a respiratory nature. Now if, while one is watching these rhythmic thoracic excursions, the mother animal is given either morphine or barbiturates, these movements stop at once. 4. As a result of the observations of Irving, Berman and Nelson of Boston, it is known that babies born of mothers who have had neither analgesia nor anesthesia cry immediately in about 98 per cent of the cases; babies born of mothers who have had nitrous oxide analgesia breathe immediately in about 80 per cent of the cases, whereas babies born of mothers who have had scopolamine-morphine or barbiturate analgesia cry immediately in from 33 to 65 per cent of the cases. In view of these circumstances it would seem justifiable to conclude that these analgesics exert a depressing effect on the baby. Full-term infants seem to withstand this satisfactorily, provided there are no other complicating factors.

DR. GEORGE J. L. WULFF, St. Louis: Drs. Krebs, Wulff and Wassermann have shown the fetal mortality in our study of 4,000 consecutive deliveries. Frequently the objection is made that twilight sleep causes increased fetal apnea. Last year I studied a series of 1,000 consecutive deliveries at St. Louis Maternity Hospital, with regard to those factors which I felt might be said to cause delayed cry and respiration. Among these were included the type of seminarcosis used, the type of anesthetic used and the incidence of operative deliveries. Premature infants, twins and those delivered by cesarean section were omitted from the series for obvious reasons. Of the total series, 16.3 per cent of the babies had delayed cry and respiration. Two hundred and seventy-five mothers had no seminarcosis, and this group served as our control. Five and five-tenths per cent of these babies were apneic. In the case of the 360 mothers who received morphine with scopolamine, 24.7 per cent of the babies had a delayed cry; in 188 cases with dilaudid and scopolamine, 24.5 per cent; in 120 cases in which sodium amytal was used with scopolamine, 6.7 per cent; in forty-seven cases in which pentobarbital-sodium and scopolamine were used, 8.5 per cent; in nine with sodium alurate and scopolamine, 11.1 per cent, and no apnea in the single case of ortal sodium with scopolamine. Using 5.5 per cent as our standard without scopolamine, it seems obvious that the use of either morphine or dilaudid with scopolamine probably increases the incidence of apneic babies, while in the cases in which the barbiturates were used the incidence more nearly approached that of the control group. The relationship of the type of delivery to fetal apnea was considered next. In the 372 cases in which delivery was spontaneous, 13.1 per cent of the babies required resuscitation. In 557 cases in which perineal forceps were used, there was 15.9 per cent of apneic infants. Of the thirty-three cases of breech presentation, there was delayed respiration in 39.4 per cent. In thirty-six cases of vertex presentation the head was rotated with forceps from the transverse or posterior position, and 27.7 per cent of these showed definite apnea. Only two cases of version were done and both babies were apneic. The differences in this analysis may be explained by the difficulty of the procedures carried out during delivery. The last analysis compares the types of anesthetics used. Fifty-eight mothers received no anesthetic and 8.6 per cent of these babies were asphyxiated. Six hundred and eighty-eight mothers received chloroform during the delivery of the infant and 16.5 per cent of the babies were apneic. Nitrous oxide was used in 223 cases, 15.6 per cent of these infants requiring resuscitation. Ether was used in thirty-one cases, and these showed a 29 per cent incidence of apnea.

DR. FREDERICK V. EMMERT, St. Louis: Dr. Siegfried Goldschmidt and I desire to introduce a method of analgesia in labor which, to our knowledge, has not been used in this country. It is a new barbiturate, sodium amyl beta bromallyl malonylurea, and is given rectally. We induce the analgesia when labor is definitely established and the cervix is dilated to two or three fingerbreadths. Ten cubic centimeters of the solution is given by means of a small catheter as high rectally as possible. The effect is noticeable after from ten to fifteen minutes, causing drowsiness and sleep between contractions. In the majority of our cases there were no signs of restlessness. We found no objectionable interference with labor in respect to frequency and force of contractions. The analgesia lasts normally from three to four hours and as long as eight hours. We saw no undesirable effects on the mother. A great number of the babies were born spontaneously, entering the world in good color and crying lustily. The explanation of this behavior is the rapidity and complete destruction of the drug in the liver, so that only traces can be found in the urine of the patient immediately after delivery. With this method we find labor hastened and the color of the patient, respirations, blood pressure and pulse unchanged. There have been no complications, except one occipitoposterior position. No postpartum hemorrhages have occurred. Thus far we have delivered twenty-five cases by this method. The average length of labor after the administration of the drug was three hours and ten minutes. The analgesia was complete in 75 per cent, incomplete in 25 per cent. The amnesia was complete in 80 per cent and partial in 20 per cent. There were no maternal or fetal deaths.

DR. P. B. RUSSELL JR., Memphis, Tenn.: I am inclined to express my appreciation to those men who think something of analgesics. Never have I found the operative incidence increased as the result of using analgesia. If a man is given relief for the pain of a passage of a ureteral stone, a woman is entitled to the same care when she suffers the agonizing pains of labor. A patient can ease through the first stage of labor without complications if the analgesia is not abused. There is no need for any operative precedure other than the low forceps: the prophylactic forceps technic as described by De Lee. This will save the structures of the perineum and there will be no lacerations and no need for perineorrhaphy or colporrhaphy, which is not the case with the spontaneous delivery.

DR. S. KENDIG WALLACE, Baltimore: I feel that obstetric analgesia should be used only in cases of prolonged labor. I want to call attention to some of the disadvantages of the methods already presented. Morphine given from four to six hours before delivery is dangerous; 7½ grains (0.5 Gm.) of pentobarbital-sodium at one time is quite a large dose. In the case of paraldehyde, it seems that the patient is so sound asleep that she cannot bear down, cannot void and must be catheterized every eight hours. I should like to mention the method that was presented last year in Atlantic City, the modified Gwathmey method, in which one begins with 3 grains (0.2 Gm.) of pentobarbital-sodium by mouth and gives the Gwathmey ether, quinine and alcohol by rectum a half hour later. One gets the patient asleep with the two capsules and the ether and she wakes up and has a pain and goes back to sleep. The advantage in the long labor is that there is no need to intervene. One can wait because the patient sleeps between the pains. A nurse

is not needed and the quinine stimulates the pains. The only disadvantage is the burning when the ether is given.

DR. OTTO S. KREBS, St. Louis: Thorough analysis of our results have been on record for a good many years and has shown the harmlessness of scopolamine-morphine seminarcosis in competent hands and in proper surroundings. Dr. Hamilton does not find any of the methods at hand uniformly satisfactory and rather deprecates their use. In St. Louis, some of us spend a great deal of time with our patients in labor, remaining with the woman, so far as possible, from the time active labor has begun to its completion. For the obstetrician who comes to the patient only in time to deliver her, there is no need for analgesia; but if he followed the progress of labor with her, his point of view probably would change. To be with a parturient woman for hours and not to be able to feel reasonably sure one is making the ordeal more bearable would make obstetric work intolerable to me and I would give it up. Morphine, which Dr. Baer uses entirely, we know to be the potent factor in delayed fetal respiration since 1906, further emphasized in 1915, and we have been able by modifying our technic to reduce the dosage or limit its use with improved results. Dr. Eastman reports an anoxemia and effect on intrauterine respiration produced by various anesthetic agents and analgesics. Whether this condition in the fetus is of any danger or consequence to the child has not been established. Since we who use these agents so extensively find such uniformly satisfactory results, and since our figures in thousands of cases over twenty years show a fetal mortality comparing favorably with any and better than most clinics in this country, might not this fetal effect be a protective mechanism? Dr. De Lee states that "twilight" is "passé," that it is no longer being used in Europe. If Dr. De Lee would turn to St. Louis he would learn that it has been used safely and successfully in more than 5,000 cases there in one hospital since 1929. I was not surprised to hear Dr. Holmes's assault on the drugs. In 1923 in San Francisco he made almost the identical speech, except this time he mislaid his keynote phrase, "scopolamine, the murderous drug," which was his opinion at that time based on his experience with one case.

DR. ROBERT M. GRIER, Evanston, Ill.: I suppose I should cringe to come up on this platform after all the fear instilling remarks of some of the discussers. Their criticism is uncalled for. Pentobarbital-sodium is not a perfect drug. We have mentioned the points of disadvantage in our contraindications. Until such fantastic methods as hypnotism and the like can be used, we are satisfied with the effectiveness and safeness of pentobarbital-sodium. The figures of our results should speak for themselves. We have watched our results carefully and feel that so far it is a good analgesic in labor. Some day a better method will come into use, but we shall continue using these drugs until it does. We feel that a woman is entitled to relief from the pains of labor and that they are real and cannot be passed off lightly by the power of suggestion.

DR. HOWARD F. KANE, Washington, D. C.: The reason I tried to find some method of relieving pain in labor was not entirely to please the women but because I felt that obstetric shock was just as much an entity as surgical shock. Fear, fatigue and pain are factors in obstetric shock. I felt that if the patient could be spared the fear and the shock from pain itself she would be spared the shock and would be in better condition and a much better risk as a surgical emergency, as Dr. Baer pointed out. No method is entirely successful, but an attempt is being made to find one. These patients are in much better condition post partum. Their strength comes back sooner, they are able sooner to take care of their babies, and altogether they are in better condition. Dr. Hamilton said that these methods are not available to many women. That is true, but why deprive the women who can have it simply because some cannot?

Nature of Hunger.—Hunger is a primitive, elemental sensation. It is felt as a dull ache or gnawing pain, referred to the midchest region or somewhat lower. Unlike appetite, it is not associated with desire for any particular food. It does not invite men to eat, it drives them to do so.—Cannon, W. B.: Digestion and Health, New York, W. W. Norton & Co., Inc., 1936.

Clinical Notes, Suggestions and New Instruments

ENCEPHALOGRAM SYRINGE

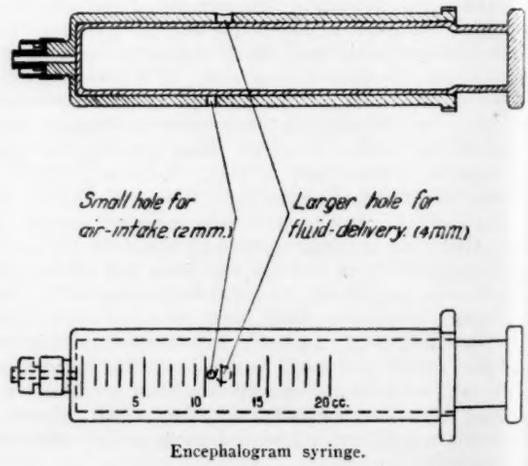
WARREN T. BROWN, M.D., NEW HAVEN, CONN.

The accompanying drawings illustrate a simplified instrument for the withdrawal of spinal fluid and injection of air for purposes of encephalography.

The 20 cc. Luer-Lok syringe [1] is altered by drilling two holes in the barrel on opposite sides. A small hole, 2 mm. in diameter, is drilled just behind the 10 cc. graduation mark with its forward edge tangent to the mark. A larger hole, 4 mm. in diameter, is drilled on the under side of the barrel with its forward edge directly opposite to the back edge of the small hole on the top side of the barrel.

THE WORKING PRINCIPLE

With the patient in a sitting position, a lumbar puncture is done in the third or fourth lumbar space, and a pressure reading is taken. The manometer is removed, and the syringe with the plunger drawn to the 10 cc. mark is attached to the needle by the Luer-Lok device. The 10 cc. of air is injected, and the fluid is allowed to enter the syringe, pushing the plunger back



Encephalogram syringe.

by its own pressure. It may be necessary to rotate the plunger with the fingers to prevent its sticking or becoming lodged. When the end of the plunger reaches the 10 cc. mark, air enters through the small hole and the plunger can be drawn back some 6 mm. to open the larger hole and allow the 10 cc. of fluid to pour into a beaker held by an assistant. The fluid pours out in about three seconds or less and the barrel is simultaneously filled with air through the small hole on the top side. When the plunger is then pushed forward to the 10 cc. mark, the barrel chamber is closed by the plunger blocking both holes. The 10 cc. of air it contains is then injected. Should the withdrawal or injection of larger amounts be desired, the holes can be closed by the thumb and forefinger of the sterile gloved hand and released at the point desired. When the fluid has flowed out, the holes are again closed and an equal amount of air is injected.

Intermittent pressure readings may be taken by removing the syringe after injecting air and applying the manometer to the needle.

An instrument of this type has been used by me in doing air injections for encephalography in the Department of Psychiatry of the New Haven Hospital, New Haven, Conn., for a period of one year and has been found to simplify and facilitate the procedure.

333 Cedar Street.

1. Manufactured by the Becton Dickinson Company.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.*—ED.

THE THERAPY OF (HORSE) SERUM REACTIONS

GENERAL RULES IN THE ADMINISTRATION OF THERAPEUTIC SERUMS

IN COLLABORATION WITH DR. SAMUEL M. FEINBERG

In a number of diseases, serum therapy is life saving and hence obligatory; in some instances, intravenous injection of the serum is the only mode of administration by which therapeutic results can be obtained. In some — fortunately rare — cases, serious sickness and even death may result from serum administration, particularly when improperly given by the intravenous route.

DIAGNOSIS

Ordinary Serum Sickness.—Nine or ten days after injection, a painful and itching swelling at the site of the injection is noted. Soon fever develops, accompanied rarely by nausea and vomiting. A day or two later a rash appears, which is generally urticarial and causes itching. There may also be more or less generalized edema. The joints are frequently painful and tender, although not often enlarged. Sometimes periarticular edema and fluid in the joints occur. There is generalized swelling and tenderness of lymph nodes, with the regional ones usually the first to be involved. The urine sometimes shows albumin. Occasionally there are neurologic complications. There is usually a total diminution of the white cells, with a relative lymphocytosis. In a few days the patient is perfectly well. The whole process is annoying but almost invariably harmless.

This type of serum reaction is unpredictable, as the preliminary skin test is negative. It depends somewhat on the quantity of serum given and the rapidity with which it is administered. For instance, 90 per cent or more of white persons will react in such a manner if a large amount of serum is given intravenously. If it is given subcutaneously the percentage becomes smaller, but it also depends considerably on the dose. Thus, while 3 cc. will result in reactions in possibly 10 per cent, 30 cc. will produce them in 30 per cent, and 100 cc. will give them in 80 per cent of cases.

The reason for the incubation period is the interval required for the formation of antibodies, which at the time of serum sickness can be found in the blood. Later the skin tests become positive.

Accelerated Serum Disease.—If the patient has previously had a serum injection, the "accelerated" type of reaction may occur following the next injection. The symptoms are similar to those described under serum sickness, but they come on after a shorter incubation period, possibly within a few minutes, a few hours, or up to three or four days following the injection. The manifestations may differ in no way from those previously described, but usually they are much more severe and alarming. There is a generalized erythema, with urticarial swellings. The pulse becomes weak and the blood pressure falls. Syncope or unconsciousness may result. The mucous membranes may be involved, with the production of sneezing, lacrimation, dyspnea and wheezing. Indeed there is a possibility of "allergic shock," which may terminate in death.

These reactions are due to the administration of a previous sensitizing dose of the serum. Unlike ordinary serum sickness, they can be anticipated by the demonstration of positive tests to serum.

Allergic Shock.—The person in whom allergic shock occurs almost always is one who is "naturally" sensitive to the serum. The person who is naturally sensitive to horse serum is one who is sensitive to horse dander. This fact can be frequently elicited by the history obtained from the patient. He may be aware that being in the vicinity of horses may bring on an attack of rhinitis, coughing or dyspnea. As a person may be clinically sensitive to horse dander without his knowledge, one should inquire whether he has hay fever or asthma, eczema, or similar manifestation of natural sensitiveness. It is also advisable to inquire into a history of allergy in the family.

True, not all people who are clinically sensitive to horse dander are sensitive to serum. It has been shown that horse dander contains two antigens, the dander antigen (A) and a small amount of the serum antigen (B). If one is sensitive to both of the antigens in the dander, A and B, he will be sensitive to serum. If, on the other hand, he is sensitive only to antigen A, serum will not produce any reaction.

Injection of horse serum into a person who is sensitive to horse dander and serum is an extremely serious undertaking. A reaction is practically certain to occur, even if the amount of serum administered is comparatively small. Large quantities of serum are likely to be extremely dangerous and even one or two drops have been known to kill. The reactions are of the "immediate" type, occurring from several minutes to two or three hours following injection. The mildest reactions consist of a suffusion of the face, some urticarial eruption, stuffiness of the nose, sneezing and asthma. In the more severe cases these symptoms may or may not be present but the main manifestations are varying grades of unconsciousness, loss of reflexes and sphincter control. In the most severe reactions there may occur marked distention of the lungs, with cessation of respiration and death within a few minutes.

PROPHYLAXIS

These three types of serum reactions have been thus described in order to emphasize the importance of investigating the history and the sensitivity of every patient who is to be given an injection of therapeutic serum.

History.—The following are important questions to ask the patient: Is there hay fever, asthma or eczema in the patient's family? Is the patient subject to allergic manifestations, such as hay fever, vasomotor rhinitis, eczema, asthma or drug idiosyncrasies? Has he ever been around horses? If so, does such exposure produce sneezing, blocked nose, itching of the eyes, coughing, wheezing or dyspnea? Has he had a previous serum injection? How long ago? Has he ever had a serum reaction, particularly in the last four or five months?

Tests for Sensitivity.—Such tests should be made on every patient in whom serum administration is contemplated. For the purposes of testing, diluted normal horse serum or the diluted immune serum is used. For a preliminary test the serum should be no stronger than 1:100; i. e., one part of serum to 99 parts of physiologic solution of sodium chloride.

The intracutaneous test consists of the injection of a small amount, 0.05 cc. or less, of diluted serum into the epidermis so that a small wheal is raised. A positive reaction consists of an urticarial swelling with central blanching, peripheral erythema and itching. This occurs within five to twenty minutes.

By the ophthalmic test is meant the instillation of one drop of the diluted serum into the conjunctival sac. A positive reaction usually occurs in a few minutes. It consists of slight injection of the conjunctival vessels and itching, if the response is mild; and marked injection with edema of the conjunctiva and lids, if the reaction is severe. The test should be made first with 1:100 serum dilution. Only if it is negative should a 1:10 dilution be tried. In case of a marked conjunctival reaction it is advisable to instil a drop or two of Solution of Epinephrine into the sac. The ophthalmic test is generally considered a more true indication of clinical sensitivity.

The following routine procedure is recommended: If there is no history of allergy (asthma, hay fever) and an intracutaneous test with 1:100 serum is negative, an intracutaneous test with 1:10 serum should be made. If the latter is negative, one should proceed with serum administration.

If there is no history of allergy and an intracutaneous test with 1:1,000 serum is positive, an ophthalmic test with 1:100 dilution should be made. If the latter is negative, serum 1:10 should be instilled into the conjunctiva. If both ophthalmic tests are negative, serum administration is probably safe but accelerated serum sickness may occur. If either ophthalmic test is positive, serum administration is contraindicated, theoretically.

If the patient is known to have allergic symptoms when near horses or a positive skin reaction to horse dander and if the intracutaneous test with 1:100 serum is negative, he should be tested with 1:100 and 1:10 conjunctivally. If the latter tests are negative, serum administration is probably safe.

If the patient is allergic to horse dander and the intracutaneous test with 1:100 serum is positive and the ophthalmic tests with 1:100 and 1:10 serum are negative, it is very questionable whether serum should be administered, if its administration is not a necessity.

If an individual is allergic to horse dander and both the intracutaneous and the ophthalmic tests with 1:100 serum are positive, the administration of horse serum is absolutely contraindicated unless death is almost certain to ensue without its use.

Dose and Method of Administration. — For nonallergic persons the rule applies to give the entire necessary dose of antiserum at the earliest possible moment by slow intramuscular injection; and, in critical conditions, intravenously. There is no known method of preventing ordinary serum sickness.

Those who by the history or the sensitivity test are found to be liable to serum sickness because of acquired allergy—those without a positive eye test—should be given "broken dosage," i. e., the smallest dose of antiserum that is likely to do any good, and this should be repeated at intervals. It should be injected subcutaneously very slowly and into an extremity in such a way as to permit immediate stopping of absorption by means of a tourniquet (e. g., the cuff of a sphygmomanometer) in case early untoward manifestations appear. Additional doses of antiserum may then be given at intervals, provided these do not exceed five days, as a greater interval between serum injections is liable to produce or increase allergy.

The congenitally allergic individual, sensitive to horse serum and horse dander—history and/or both intracutaneous and ophthalmic tests positive—must not be given horse serum under any circumstances or in any way.

The recommendation of rapid desensitization by half hourly increasing doses of the serum is not fully justified. Any one who has seen how painstaking and slow is the method of producing merely a very partial "desensitization" or hyposensitization over a period of months cannot possibly conceive of a desensitization in a few hours sufficiently great to allow the administration of several cubic centimeters of serum. Such a dose of antigen constitutes an amount hundreds of times greater than the quantity safely reached with other antigens—such as pollen or horse dander—after several months of treatment. "Rapid desensitization" under these circumstances is practically impossible.

Immune serum from another species to which the patient is not allergic is the only way of securing the benefits of serum therapy for the congenitally allergic person. It is also the most desirable form for the one who has acquired horse serum allergy. Antiserum obtained from cattle may be suitable. Human immune serum has the great advantage of minimum liability to the production of allergic manifestations.

Avoidance of producing horse serum sensitization should also be mentioned under the heading of prophylaxis. Thus, while one should not delay the employment of diphtheria antitoxin in all cases reasonably suggestive of diphtheria, it is bad practice to give diphtheria antitoxin as a routine to every patient who has a sore throat. In immunization for the prevention of disease, horse serum injections should, as far as possible, be avoided.

TREATMENT

Whenever therapeutic serum is administered, Solution of Epinephrine should be at hand ready for instant use. At the first sign of any reaction, 1 cc. of it should be given intramuscularly. If the symptoms are extremely urgent 0.2 or 0.3 cc. should be given intravenously, well diluted and very slowly. The epinephrine may be repeated in a few minutes if necessary. In questionable cases, epinephrine may be injected even before the administration of serum.

It is to be remembered that no amount of epinephrine will prevent a reaction in a person who is naturally allergic to horse serum. However, one who has been so unfortunate as to obtain such a reaction should continue to give epinephrine at short intervals. If the patient has survived the first fifteen or twenty minutes of the reaction, his chances for recovery increase as the minutes elapse. It may be wise at that time to combat some of the effects of the shock by means of morphine hypodermically, by caffeine with sodium benzoate, by heat applied to the body, and by hot drinks.

Ephedrine sulfate by mouth has a more prolonged effect. It may be given in doses of 0.04 Gm. every two to four hours as required to maintain the relief obtained from epinephrine. When it fails, epinephrine injection should be repeated as required for comfort.

Calcium may be given by slow intravenous injection of 20 cc. of 10 per cent solution of calcium gluconate. The rate of injection should not exceed 0.5 cc. per minute. This may be supplemented by 10 cc. of 10 per cent solution of calcium gluconate given intramuscularly, and this injection may be repeated every twelve hours until the rash or other symptoms have subsided.

Acetylsalicylic acid (a 0.3 Gm. capsule every two to four hours as required) is often of help in allaying the itching. When the patient is unable to sleep on account of the pruritus, the addition of barbiturate to the ephedrine (which has a tendency to produce insomnia) is indicated. The three agents may be combined as in the accompanying prescription.

Sedative Prescription

℞	Ephedrine sulfate	0.50 Gm.
	Phenobarbital	0.50 Gm.
	Acetylsalicylic acid	5.00 Gm.

M. and div. into 15 capsules.
Label: One every 2 to 4 hours as required.

The therapy of urticaria (q. v.) may also be brought into requisition in obstinate cases.

For external use the employment of evaporating applications such as calamine lotion with 1 per cent phenol, diluted vinegar, hot sodium bicarbonate solution or diluted alcohol should not be neglected. If the eruption is generalized, the patient may be given a warm alkaline bath (a cup of baking soda to the tub), which should be followed by freely dusting the skin with talcum powder, to which menthol (0.25 per cent) may be added with advantage.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

SEXTON BRAND TOMATOES, JUICE PACKED

Manufacturer.—John Sexton & Company, Chicago.

Description.—Canned whole peeled tomatoes, packed in juice.

Manufacture.—Tomatoes are washed, inspected, scalded, hand peeled, again inspected and hand packed in cans. Cans filled with tomato juice are exhausted, sealed and processed.

Analysis (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 93.9%, total solids 6.1%, ash 0.53%, fat (ether extract) 0.5%, protein (N × 6.25) 1.1%, crude fiber 0.30%, carbohydrates other than crude fiber (by difference) 3.9%.

Calories.—0.24 per gram; 7 per ounce.

Claims of Manufacturer.—Choice quality whole peeled tomatoes packed in juice without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

CERTIFIED BRAND PURE VANILLA EXTRACT

Manufacturer.—Certified Extracts, Inc., New York.

Description.—Vanilla extract containing water, ethyl alcohol, cane sugar and extractive matter of Bourbon Vanilla Beans.

Manufacture.—Vanilla beans are chopped and percolated with 55 per cent alcohol for six days and nights. The percolate is drawn off. The beans are washed and are pressed to secure the remaining percolate, which is added to the first liquid. Water is added to make a definite amount, sugar is dissolved in the extract and the mixture is aged in storage tanks, filtered and bottled.

Analysis (submitted by manufacturer).—(In terms of grams per hundred cubic centimeters).—Vanillin 0.29, resins 0.18, ash 0.30, acidity cc. N/10 per 100 cc., 50 cc., alcohol by volume 35 per cent and lead number (Winton) 0.64.

(a) DIADEM BRAND GOLDEN TABLE SYRUP
(b) DIADEM BRAND WHITE TABLE SYRUP

Distributor.—Schnull & Company, Indianapolis.

Packer.—The Torbitt & Castleman Company, Inc., Louisville, Ky.

Description.—(a) Table syrup; a blend of corn syrup and refiners' syrup—the same as Bob White Brand Fancy Table Syrup Golden (THE JOURNAL, Aug. 3, 1935, p. 369). (b) Table syrup; a blend of corn syrup and sucrose syrup, flavored with vanilla—the same as Bob White Brand Fancy Table Syrup Crystal White (THE JOURNAL, Oct. 19, 1935, p. 1271).

Claims of Manufacturer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

SEXTON BRAND BLUEBERRIES, JUICE PACKED

Manufacturer.—John Sexton & Company, Chicago.

Description.—Canned cooked blueberries, packed in juice.

Manufacture.—Blueberries are cleaned, mechanically sorted, inspected, cooked and automatically filled into cans. The cans are sealed and washed.

Analysis (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 88.9%, total solids 11.1%, ash 0.2%, fat (ether extract) 0.4%, protein (N × 6.25) 0.4%, crude fiber 1.1%, carbohydrates other than crude fiber (by difference) 9.0%.

Calories.—0.41 per gram; 12 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

FORT HAMILTON BRAND HAWAIIAN PINEAPPLE—CRUSHED AND GEMS

Distributor.—E. H. Frechtling Company, Hamilton, Ohio.

Packer.—Hawaiian Pineapple Company, San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

JENNY LEE BRAND MACARONI RINGS AND JENNY LEE BRAND ALPHABETS

Manufacturer.—Minnesota Macaroni Company, St. Paul.

Description.—Macaroni of various shapes prepared from durum semolina.

Manufacture.—The same as for Minnesota Brand macaroni products (THE JOURNAL, Aug. 3, 1935, p. 369).

TEXAS GIRL BRAND BAKING POWDER

Manufacturer.—The Snow King Baking Powder Company, Cincinnati.

Description.—Baking powder consisting of starch, sodium bicarbonate, sodium aluminum sulfate and calcium acid phosphate; the same as Snow King Double Action Baking Powder (THE JOURNAL, Oct. 13, 1934, p. 1151).

18-K BRAND COFFEE

Manufacturer.—Winston and Newell Company, Minneapolis.

Description.—Roasted coffee; essentially the same as 18-K Brand Vacuum Packed Fresh Roasted Coffee (THE JOURNAL, June 30, 1934, p. 2187) except that it is the whole bean product and is not vacuum packed.

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SATURDAY, NOVEMBER 21, 1936

HYPOGLYCEMIC SHOCK TREATMENT OF SCHIZOPHRENIA

Recently The Journal made available a report by Glueck[1] of his observations on a new treatment for schizophrenia. A report just released by the Board of Control for England and Wales, written by Dr. Isabel Wilson,[2] also concerns the present status of hypoglycemic shock treatment of schizophrenia. Present opinion, according to the report, indicates that this treatment should be employed primarily in early cases, but even cases of long duration sometimes show satisfactory results. The treatment consists in giving the patient a series of doses of insulin, as a result of which he falls into a state of hypoglycemia. The injections are continued at frequent intervals until the desired result is obtained. As a rule the first dose is from 15 to 30 units of insulin intramuscularly, given at 7 a. m. without previous ingestion of food. The amount is increased by 5 or 10 units daily until a dose is reached to which the patient reacts with what is known as "insulin shock." The most important symptoms of satisfactory shock are sweating, hunger, bradycardia, epileptiform attacks, low temperature, salivation, mental changes and coma. If it is desired to stop the shock before the patient has gone into coma, it may be readily interrupted by giving the patient from 150 to 200 Gm. of dextrose in tea or water. Dextrose may be administered also by nasal tube or by intravenous injection.

There were three deaths from treatment in Vienna among the first 104 cases, but apparently no further deaths have been recorded there or elsewhere. Other than a possible fatal accident, the effect on the heart, the pancreatic damage and the alterations of sugar metabolism are possibly the most important complications. Dr. Wilson believes that this method of treating schizophrenia is promising. The association between insulin treatment and clinical improvement is occasionally striking, but the degree of response to be expected cannot be prophesied on clinical grounds.

Survey of the various theoretical explanations advanced for the success of this treatment reveals no solid ground of physiologic or pathologic proof, and the real mechanism underlying the symptoms and changes that have been observed remains unknown. Thus, while agreement is still far off, Dr. Wilson believes that the treatment is neither too dangerous nor too unpleasant to exclude it as a means of treating the serious disorder known as schizophrenia. The report recommends, therefore, that hypoglycemic shock therapy should be begun in a public mental hospital in England or Wales, only, however, after careful study of the experiences already gained. Furthermore, treatment should be carried out in an "insulin ward"; one physician should be in charge of all treatment, careful records should be kept, control observations should be made, and treated cases should remain under close observation for several years.

Wortis[3] similarly has recently reviewed the subject. His conclusions differ little from those reported by Wilson, but he believes that the most likely theory explaining the results of insulin shock is that metabolism in the central nervous system is improved directly or indirectly by stimulation of carbohydrate consumption. In the seventy-five cases of schizophrenia reported by him, a total average of 63 per cent of the cases showed remission following treatment. In view of the frequency of spontaneous remissions in this disorder, these results are more suggestive than conclusive.

FOOD POISONING

Significant bacterial contamination of foods falls into two groups: contamination with specific infectious bacteria such as the typhoid bacillus, and contamination with bacteria that may bring about deleterious changes in the food itself.

The contamination of foods with bacteria derived from human and from certain animal infections, such as tuberculosis and various septic processes, is a familiar public health problem. As regards raw milk, particularly, in which the possibilities of contamination are numerous and multiplication of many bacteria can readily occur, preventive measures, public and private, have long been considered necessary. The almost universal practice in the United States of pasteurizing milk has greatly reduced the food hazards of this type. The recent indorsement by the Certified Milk Producers Association of the pasteurization of certified milk emphasizes the sanitary value of the pasteurizing process. Greater cleanliness in the preparing and serving of raw foods has likewise diminished the danger of food-borne infection.

At present the possibility of bacterial contamination of food with specific pathogens is best dealt with by thorough cooking, by general measures of cleanliness,

1. Glueck, Bernard: The Hypoglycemic State in the Treatment of Schizophrenia, J. A. M. A. **107**: 1029 (Sept. 26) 1936.
2. Wilson, Isabel G. H.: A Study of Hypoglycaemic Shock Treatment in Schizophrenia, Board of Control, H. M. Stationery Office, 1936.
3. Wortis, Joseph: On the Response of Schizophrenic Subjects to Hypoglycemic Insulin Shock, J. Nerv. & Ment. Dis. **84**: 497 (Nov.) 1936.

by careful avoidance of foods derived from sick or unsound animals, and possibly, in certain limited groups, by supervision of food handlers. Routine examination of all food handlers, although advocated by a few sanitarians, is a task of almost insuperable difficulty in the hotels and restaurants of large cities because of the frequent turnover of personnel; as regards the individual housewife or domestic servant, it is quite out of the question.

A well known instance of illness caused by swallowing harmful substances formed in foods by bacterial action is botulism. The high fatality of botulism (80 per cent or more) makes this disease justly dreaded in spite of its relative rarity. The botulism bacilli are widely distributed in soil and grow readily in a variety of foodstuffs under anaerobic conditions such as exist in foods preserved by heat and some other methods. Processes for the destruction of the bacteria of botulism were accurately worked out by commercial canning organizations in the United States about ten years ago, and their general application by the canning industry has been followed by immediate practical success.

Since 1925 there has been no instance of botulism traced to the use of food commercially canned in the United States, although there have been two recent outbreaks of botulism caused by commercially canned food imported from other countries, one from imported canned Italian onions,[1] one from imported canned German sprats.

The chief danger from botulism in this country at present appears to lie in the use of locally grown and home canned foods. Although many attempts have been made by the United States Department of Agriculture and other agencies to foster the use of suitable home canning methods, outbreaks of botulism traceable to the use of imperfectly sterilized home canned foods continue to occur. In 1935 there were twenty-three such outbreaks, with sixty-nine cases and forty-two deaths. K. F. Meyer[2] has succinctly expressed the situation: "Until every farmer's wife has been taught that all vegetables or other nonacid foods home canned by the boiling water or oven process must be thoroughly boiled[3] before they are served, botulism intoxication may be anticipated."

Another type of food poisoning caused by the presence in foods of the products of bacterial action has come to light in recent years.[4] It has been established that certain common bacteria, when given an opportunity of growing in foods under suitable conditions, generate a toxic substance that may cause violent gastro-intestinal symptoms. It has, for example, been definitely shown that staphylococci[5] are able to produce a substance that is poisonous when swallowed by man and by the monkey. This type of food poisoning has been most commonly observed in hot weather in connection with the use of cream-filled pastries. Several outbreaks have been traced to cream pies, chocolate éclairs and similar pastries, the number of victims in a particular outbreak sometimes mounting into the hundreds. Although the symptoms produced by this toxic substance are sometimes severe, the attacks are rarely, if ever, fatal. Cleanliness of the ingredients and proper attention to the sanitation of the environment and of the personnel engaged in manufacture constitute an important safeguard against this form of food poisoning, since heavy initial seeding is doubtless one of the factors leading to abundant production of the toxic substance. Prompt and constant refrigeration is also an important aid in preventing bacterial multiplication. In some localities official restrictions have been placed on the sale of cream-filled bakery goods in hot weather.

1. Koser, S. A., and Reiter, D. O.: J. Prev. Med. **3**: 499 (Nov.) 1929.
2. Meyer, K. F.: California & West. Med. **44**: 385 (May) 1936.
3. Fortunately the botulinus toxin is destroyed by boiling.
4. Jordan, E. O., and Burrows, William: Proc. Soc. Exper. Biol. & Med. **30**: 448 (Jan.) 1933.
5. Jordan, E. O., and Burrows, William: Am. J. Hyg. **20**: 604 (Nov.) 1934.

Current Comment

SELLING SAMPLES

One of the smallest performances of certain tradesmen is the purchase from physicians for resale of the samples sent to them by manufacturers of proprietary medicines. In some of our large cities panhandlers float from office to office, begging such medicines from secretaries, office attendants and others to whom the physician may occasionally turn over such materials for disposal. It would seem almost to be taken for granted that the doctor will keep samples of drugs of established merit and that the materials that drop into the hands of the panhandlers are usually new preparations of which the doctor has no knowledge, or proprietary medicines of little or no established usefulness. Nevertheless the practice seems to yield a few shekels, because it perennially appears on the troubled surface of medical waters. The most recent incident concerns an attempt to develop this business in Florida. Florida physicians received postal cards labeled Riverside Specialty Company, offering to purchase samples sent to them by manufacturing houses. An investigation reveals that the Riverside Specialty Company is really Mr. Leo Weinstein, a New York pharmacist, who recently moved to Florida. On inquiry he stated that about the first of September he mailed to 150 physicians in Jacksonville a form letter offering to purchase samples of drugs. After two months passed, during which time he says he did not receive a single reply, he decided to give up the idea and the Riverside Specialty Company went out of business. Mr. Weinstein says that he is again in the pharmacy business. To the physicians of Jacksonville, as Walter Winchell would say, orchids for the quality of their ideals and of their ethics. To panhandling pharmacists who pinch pennies by peddling sample pills, a fragrant bunch of scallions!!! Lest you do not comprehend, a scallion is an onion which fails to bulb but forms a long neck like a leek.

TYPHOID IN THE CCC

The Civilian Conservation Corps, now in existence more than three years, has enrolled about 1,400,000 men. They have been scattered throughout the United States in several thousand camps largely in rural areas. While the water for these camps was carefully examined and guarded there were nevertheless abundant opportunities for the drinking of polluted water when the men were leaving camp on pass or on work parties on locations some distance away from the camp water supply. When enrolled, the men were examined physically by U. S. Army medical officers and all of them were given the regular army typhoid vaccine. Lieut. Col. George F. Lull [1] of the medical corps has summarized for the three years the number of cases of typhoid that developed and has pointed out the relation of these cases to the time of completion of the typhoid prophylaxis. In a total enrolment of almost a million and a half men up to the first of this year, there had developed only 237 cases of typhoid, thirty-three of which developed before the inoculations with typhoid vaccine were complete. These thirty-three men therefore had probably been infected before coming to camp. Since all these men had been vaccinated against typhoid, it is interesting to note the similarity of the morbidity rate, the mortality rate per thousand, and the case fatality rate for the three years. The morbidity rate per thousand was 0.32 in 1933, 0.27 in 1934 and 0.26 in 1935. The mortality rate per thousand was 0.02 in 1932 and exactly the same in 1934 and 1935. The case fatality rate was 7.59 per cent for 1933, 7.69 for 1934 and 7.61 for 1935. When these men enrolled in the Civilian Conservation Corps, army officers supervised their clothing, their food and their vaccinations and remained with them in camp, being in charge of practically all their activities except their actual work, which was performed under the direction of experienced woodsmen and foresters. The medical department of the army justly may feel proud of the successful results of their prophylaxis of typhoid in the Civilian Conservation Corps.

MEASURING SKIN PERMEABILITY

Skin permeability presents several problems of far reaching medical importance. Burgi [1] has recently devised a simple but ingenious method of measuring the permeability of the skin to gaseous substances. His apparatus consists primarily of a glass bell jar to which are attached two glass tubes by means of which volatile substances can be passed through one and out of the other and the loss of gas recorded. This method eliminates the possibility of inhalation of gases and also the necessity for measuring either the accumulation of substances in the blood or their elimination through the urine. It is necessary to apply the glass hemisphere closely to the skin and to seal the contact with petrolatum, wax or gelatin. He found that the absorption of carbon dioxide increases with the concentration of the gas in the apparatus. The results were similar with hydrogen sulfide except that concentrations of more than 0.2 per cent were likely to produce an inflammatory reaction in the skin, which in turn diminishes its permeability. Ammonia penetrated the skin almost as easily as carbon dioxide, but carbon monoxide did not penetrate at all. Sodium or calcium chloride penetrated the skin only with difficulty, and a 10 to 27 per cent solution of sodium chloride was necessary before penetration could occur at all. A group of more toxic substances was tested on the skin of rabbits. It was found impossible to produce chloroform anesthesia in these animals by passing chloroform next to the shaved skin. When tetrachlorethane was used, however, total anesthesia could be produced in from twenty to twenty-five minutes. The author's experiments convinced him that only those narcotic liquids that have a boiling point of more than 80 C. can be made to penetrate the skin in sufficient quantity to produce anesthesia or death in the rabbit. His experiments with the permeability of the skin to mercury were also interesting. Pure mercury in the form of gray mercurial ointment penetrated more easily than mercury ($HgCLNH_2$) in the form of ammoniated mercury (white precipitate). Furthermore, mercury bichloride in a 1:1,000 solution penetrated little and in a 1:100 solution not at all.

1. Lull, G. F.: Typhoid in the CCC, Mil. Surgeon **79**: 45 (July) 1936.

1. Burgi, Emile: La perméabilité de la peau aux médicaments et poisons, Bruxelles-méd. **16**: 1481 (Aug. 2) 1936.

HISTIDINE TREATMENT OF PEPTIC ULCER

The use of histidine in the treatment of peptic ulcer is of much current interest. Recently Feldheim [1] reported a comparative study of histidine in the treatment of thirty-two patients with ulcer, six involving the stomach and twenty-six the duodenum. Seven of the patients disappeared during the course of their treatment. In one series consisting of eighteen patients, five of whom had ulcer of the stomach and thirteen ulcer of the duodenum, no treatment (except for limitation of spices) other than histidine was given. The second group consisted of fourteen patients, one with ulcer of the stomach and thirteen with ulcer of the duodenum. Of these, four disappeared. The latter group received the conventional treatment for ulcer, including diet, atropine, alkalis and, in addition, histidine. To each of the patients of both groups a series of twenty intramuscular injections of 4 per cent solution of histidine was given. Each patient thus received 5 cc. every day. After the treatment had been instituted for three or four days, practically all the patients became free from pain, in spite of a usual history of prolonged and intense pain for many months. Of the fifteen patients in the first group who were examined by x-rays forty days after the completion of the course of injections, four showed some improvement in the x-ray appearance of the lesion but eleven showed no change whatever. Of the ten patients in the second group similarly examined, five derived definite benefit from the combined treatment and five showed no change. It was Feldheim's conclusion that, although histidine alone may be extremely effective in relieving the pain of ulcer, it has little ability to cure the underlying process. Combined with more conventional methods of treatment, however, histidine may be regarded as a useful adjunct even though no accurate knowledge exists concerning its mode of action in relieving pain.

1. Feldheim, E.: L'histidine dans la thérapeutique des ulcères gastro-duodénaux, Presse méd. **44**: 1189 (July 22) 1936.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title Your Health. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title Your Health, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of the Red, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs.

The topics are announced monthy in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of THE JOURNAL. The topics and speakers for the next three programs are:

November 24. Be Thankful. W. W. Bauer, M.D.
December 1. "Smog." W. W. Bauer, M.D.
December 8. Heredity and Disease. Morris Fishbein, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

The Healthmobile.—The Arizona State Board of Health recently inaugurated a mobile tuberculosis service. The healthmobile was purchased with funds given by the Arizona "Forty and Eight," the American Legion and the U. S. Children's Bureau.

ARKANSAS

Society News.—The Benton County Medical Society was addressed at Rogers recently, among others, by Dr. Raymond T. Smith, Fort Smith, on "Upper Respiratory Affections in Relation to Chronic Pulmonary Disorders."——At a meeting of the Johnson County Medical Society, October 22, the speakers were Drs. Sidney J. Wolfermann, Fort Smith, on "Arrhenomablastoma of the Ovary," and Ralph Bowen, Oklahoma City, "Recent Advances in Allergy."

CALIFORNIA

Society News.—At a meeting of the Alameda County Medical Association in Oakland, November 16, Drs. Lester B. Lawrence and Robert A. Glenn discussed "Spontaneous Subarachnoid Hemorrhage" and "Multiple Primary Carcinomas" respectively.——Drs. Burrell O. Raulston and Clarence J. Berne, Los Angeles, discussed hyperthyroidism before the San Diego County Medical Society, November 10.

Plague Infection in Fleas.—According to *Public Health Reports*, plague infection has been proved by guinea-pig inoculation in fleas collected from ground squirrels (Citellus beecheyi) in the San Ardos area of Monterey County and from pooled fleas taken from chipmunks (genus Eutamias) and ground squirrels (Citellus beecheyi and genus Callospermophilus) in the Lake Tahoe region. A human case of plague was reported from Monterey County in June of this year, but this is the first evidence of plague in ground squirrels in this county since 1931. The fleas collected near Lake Tahoe were from the region where a human case of plague occurred in July of this year.

Survey of Relief Cases.—The Central Medical Bureau of San Francisco and the University of California Medical School collaborated in a survey of 1,000 relief cases to determine why the emergency relief load in the state continues a major problem. The survey revealed that 26.7 per cent of the work relief subjects examined were found physically sound, while 6.5 per cent were found to be unemployable because of disease. For the purpose of the survey the relief subjects were divided into four classifications: The A group embraces the physically sound, the B group the physically frail but organically sound, the C group the ones with demonstrable organic lesions not producing symptoms, while the D group included those with demonstrable lesions which would interfere with normal activities. A percentage of 36.5 was recorded for the persons in the C classification, indicating this group to be in a measure responsible for the persistence of the present relief load, it was stated.

COLORADO

Society News.—Dr. William T. H. Baker, Pueblo, addressed the Arapahoe County Medical Society, meeting with its woman's auxiliary, October 26, on "The Business Side of Medicine."——The Arkansas Valley Medical Association was addressed at Salida, October 24, by Drs. Benjamin E. Konwaler, Pueblo, on "Nontuberculous Diseases of the Lungs"; Kenneth B. Castleton, Salt Lake City, "Surgical Aspects of Carcinoma of the Colon," and Emeric I. Dobos, Denver, "Interpretation of Electrocardiograms."——Among others, Dr. Arthur J. Markley, Denver, addressed the Boulder County Medical Society, October 15, on syphilis control. At a special meeting of the Chaffee County Medical Society in Salida, October 8, Dr. Markley also discussed syphilis and Dr. William T. H. Baker, Pueblo, "The Business Side of Medical Practice."——Dr. Vera H. Jones, Denver, discussed the crippled children's program before a special meeting of the Eastern Colorado Medical Society recently.——The Medical Society of the City and County of Denver was addressed November 3 by Drs. Robert W. Gordon on "Gastro-Intestinal Symptoms of Urinary Tract Disorders"; Gerrit Heusinkveld, obstetrics, and Harry H. Wear, "Use of Mandelic Acid in Urinary Infections."——Dr. Raynor E. Holmes Sr., Canon City, discussed "Herniotomy as Complicated by Latent Gonorrheal Infection" before the Fremont County Medical Society, October 26, in Canon City.——At a meeting of the Pueblo County Medical Society in Pueblo, November 3, Dr. Frederick M. Heller spoke on "Recent Advances in Infectious Diseases."

CONNECTICUT

Health Officers Appointed.—Dr. Thomas C. Hodgson has been named health officer of Berlin to fill the unexpired term of Dr. Matthew H. Griswold, and Dr. Harold T. Oesau has been named acting health officer of the town of Stratford, succeeding the late Dr. DeRuyter Howland. Dr. Frank M. Dunn, New London, has been appointed health officer of Waterford to succeed the late Dr. Ross E. Black.

New Director of Mental Hygiene.—Dr. George K. Pratt, since 1930 medical director of the mental hygiene committee of the New York State Charities Aid Association, has been appointed to a similar position with the Connecticut Society for Mental Hygiene. He succeeds Dr. Edgar Van Norman Emery, who has been appointed professor of social psychiatry at Washington University School of Medicine, St. Louis. Dr. Pratt graduated from the Detroit College of Medicine and Surgery in 1915. He was the medical director of the Massachusetts Society for Mental Hygiene from 1921 to 1925 and is the author of several books on his specialty.

DISTRICT OF COLUMBIA

Personal.—Dr. Arthur C. Christie, Washington, D. C., will deliver the Silvanus Thompson Lecture before the British Institute of Radiology at its annual congress in Westminster, December 2.——Dr. Jefferson R. Kean, brigadier general, retired, U. S. Army, and founder of Cuba's sanitation department in 1899, was awarded the grand cross of the Order of Carlos Finlay, the highest official honor in Cuba in the medical field.

GEORGIA

Officers of State Board.—Dr. Jesse L. Howell, Atlanta, was elected president of the Georgia State Board of Medical Examiners at a meeting, October 13-14, and Dr. Donald T. Rankin, Alto, vice president. Dr. Miller T. Harrison, Atlanta, is secretary of the board.

Personal.—Dr. Warren Bond Matthews, formerly instructor in pathology, Northwestern University School of Medicine, Chicago, has been appointed associate professor of pathology at Emory University School of Medicine, Atlanta, succeeding Dr. Jack C. Norris, who resigned to engage in the private practice of medicine. Dr. Norris will continue to give the course in public health.

ILLINOIS

Antirabies Serum on State Free List.—Antirabies serum will hereafter be distributed without charge to all persons in need of it, the Chicago *Tribune* reported November 14. Certificates of poverty will no longer be required, it was stated, because the state department of health has placed the serum on the state's free list.

Conference of Health Officers.—The Conference of Illinois Health Officers and Public Health Nurses will be held at the Auditorium, Springfield, December 8-9. The program will include the following speakers:

Dr. Edward G. Huber, instructor in preventive medicine and hygiene, Harvard School of Public Health, Boston, Administrative Functions of a Health Officer.
Philip Jay, D.D.S., University of Michigan School of Dentistry, Ann Arbor, Dental Caries, A Public Health Problem.
Dr. Kenneth F. Maxcy, director, School of Public Health, University of Minnesota, Minneapolis, Administrative Problems in Contagious Disease Control.
Elmer V. McCollum, Ph.D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Diet in Resistance to Disease.
Dr. Raymond A. Vonderlehr, assistant surgeon general, U. S. Public Health Service, Washington, The Problem of Syphilis Control.
Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York, What Next?

At a luncheon for health officers Wednesday, special public health problems in Illinois will be discussed by Dr. Lloyd L. Arnold, professor of bacteriology and public health, University of Illinois College of Medicine, Chicago; Dr. Winston H. Tucker, Springfield, coordinating epidemiologist, state department of public health; Dr. Milton H. Kronenberg, Chicago, medical director, division of industrial hygiene, state department of public health, and W. H. Haskell, milk sanitarian, U. S. Public Health Service.

Chicago

Symposium on Mental Hygiene.—A public symposium on mental hygiene and the environment was held at the Hotel Bismarck, November 18, by the Illinois Society for Mental Hygiene, with the following speakers:

W. Lloyd Warner, A.B., assistant professor of anthropology and sociology, University of Chicago, Social Anthropology.
Clifford R. Shaw, M.A., director, department of sociology, Institute for Juvenile Research, Sociology.
Dr. Franz Alexander, director, Institute for Psychoanalysis, Psychoanalysis.
Dr. H. Douglas Singer, director, University of Illinois Psychiatric Institute, Social Psychiatry.

Society News.—The Chicago Pediatric Society was addressed November 17 by Drs. Katsuji Kato, Chicago, and Robert Blessing, Evanston, Ill., on "Sternal Marrow Puncture in Infants and Children" and "The Incidence of Breast Feeding in Private Practice in a Suburban Metropolitan Area"; these were inaugural theses.——Among others, Dr. Theodora Wheeler discussed "Carbohydrate Metabolism and the Convulsive Threshold" before the Chicago Neurological Society, November 19.——At a meeting of the McDonagh Society for Clinical Research, November 20, Dr. Florimond J. Leblanc spoke on "Pneumonia, Pulmonary Thrombosis and Pulmonary Edema."——The Chicago Society of Industrial Medicine and Surgery was addressed, November 23, by Drs. James J. Callahan on "Fractures Around the Elbow Joint" and Edwin M. Miller, "Fractures Around the Elbow Joint in Children."

INDIANA

Society News.—The Hendricks County Medical Society was addressed in Danville, October 22, by Drs. Oscar T. Scamahorn, Pittsboro, and Marjorie G. E. Morrison, Danville, on "Septic Disease of Knee Joint and Medical History."——Dr. Penn-Gaskell Skillern, South Bend, discussed problems in surgical diagnosis and treatment before the St. Joseph County Medical Society, October 25.——At a meeting of the Jasper-Newton County Medical Society in Rensselaer, October 29, Dr. Roy R. Grinker, Chicago, spoke on infection of the central nervous system.——Dr. Parvin M. Davis discussed injuries to the spine and their treatment before the Floyd County Medical Society in New Albany, October 9.——Dr. Frank H. Jett, Terre Haute, addressed the Gibson County Medical Society in Princeton, October 12, on industrial surgery.——Dr. John R. Brayton, Indianapolis, addressed the Lawrence County Medical Society, October 14, on "Differential Diagnosis of Syphilis and Other Common Skin Diseases."——Dr. A. Jerome Sparks will discuss "The Management of Urinary Calculi" before the Fort Wayne Medical Society, December 1; Dr. Walter C. Alvarez, Rochester, Minn., addressed the society, November 10, on "Helpful Hints in Diagnosing Puzzling Types of Indigestion."——At a meeting of the Academy of Medicine and Surgery in Fort Wayne, November 17, Dr. Metodi Velkoff spoke on blood counts.——The Indiana Pediatric Society met in Fort Wayne, November 6-7. Dr. Paul L. Schroeder, Chicago, discussed "Delinquency in Children," and John H. Muyskens, Sc.D., Ann Arbor, Mich., "Fractional Speech."——At the Indiana State Conference on Social Work in Indianapolis, November 30-December 1, Dr. Oscar B. Markey, Cleveland, among others, will speak on "Problems of the Adolescent."

IOWA

Personal.—Dr. John H. Peck, Des Moines, has been appointed superintendent of the State Sanatorium for Tuberculosis, Oakdale, succeeding the late Dr. James A. Edwards.——Dr. William O. Purdy, Des Moines, has been appointed assistant medical director of the Equitable Life Insurance Company of Iowa.

Lectures on First Aid.—Lectures and demonstrations on first aid, as outlined in the Red Cross course of instruction, were given by members of the Shelby County Medical Society during September and October. The meetings were held each Wednesday evening and were open to the public, the only cost for the course being 60 cents for the purchase of a textbook. The subjects discussed were physiology and bandaging, shocks and wounds and their treatment, artificial respiration and its uses, burns and scalds and their treatment, effects of heat and cold and treatment, fractures, poisons, unconsciousness and treatment of common emergencies, and transportation of the sick and injured.

Second Annual Diphtheria Drive.—The second annual campaign to eradicate diphtheria from Polk County was recently launched by the Des Moines Academy of Medicine and the Polk County Medical Society in cooperation with the city health department, the public health nursing association and the school nursing bureau. The goal in this campaign is to immunize two thirds of the 3,000 infants born in the county every year. To this end a number of physicians agreed to inoculate for one dollar every child between the ages of 6 months and 2 years who is brought to their offices Saturday mornings from 11 to 12 o'clock on October 31, November 7, 14, 21 and 28, the state journal announces. Pamphlets on the early immunization of children in the preschool age group have been circulated among the parents. The journal points out that 599 cases of diphtheria were reported in Iowa during 1935, while 287 were recorded from January through October of this year. In 1935 the number of deaths from this cause was fifty-six, while sixteen were recorded from January through August of this year. The immunization of children against diphtheria is a feature of Iowa's program under social security activities. The work, under the direction of the state department of health, has been completed in seventeen counties with a total of 6,989 children immunized. In Audubon, Crawford, Hancock, Harrison, Winnebago and Woodbury counties, where the work is nearing completion, 2,930 children have been immunized.

KENTUCKY

District Meeting.—The Fifth District Medical Society will meet in Louisville, November 24, with the following speakers: Drs. Edward K. Martin, Frankfort, on "Extra-Uterine Pregnancy"; Philip F. Barbour, Louisville, "Acute Appendicitis in Children"; Frederick G. Speidel, Louisville, "Coronary Occlusion," and James Duffy Hancock, Louisville, "Diagnosis and Management of Acute Gallbladder Disease."

Society News.—Drs. Eslie Asbury, Cincinnati, and Francis M. Massie, Lexington, addressed the Licking Valley Medical Association in Cynthiana in September on sciatica and surgical shock, respectively.——At a meeting of the Jefferson County Medical Society, Louisville, November 16, the speakers were Drs. Richard Douglas Sanders, on "Cyclopropane Anesthesia"; Pat R. Imes, "Recent Advances in the Treatment of Varicose Veins and Leg Ulcers," and Robert F. Monroe, "Seasonal Variation in the Incidence of Puerperal Infection."——Hamp-

den C. Lawson, Ph.D., assistant professor of physiology, University of Louisville School of Medicine, addressed the Louisville Obstetrical and Gynecological Society, November 23, on "Physiology of the Endocrine Glands."

MARYLAND

Fund for the Study of Infantile Paralysis. — About $350,000 will be given to Johns Hopkins University School of Medicine, Baltimore, to be used in seeking a cure for infantile paralysis, under the will of the late Mrs. M. B. Graham, Washington, D. C.

MASSACHUSETTS

Special Service for Physicians.—A special service for physicians and medical students was held in the Cathedral Church of St. Paul, Boston, October 18. Dr. John M. T. Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine, Baltimore, the principal speaker, spoke on "Religion in Medicine."

Dr. Fitz Appointed Lecturer in History of Medicine at Harvard.—Dr. Reginald Fitz, Wade professor of medicine, Boston University School of Medicine, and director of Evans Memorial Hospital, has been appointed lecturer in the history of medicine at Harvard University Medical School for three years. Dr. Fitz, who is university marshal at Harvard, resigned in 1935 as associate professor of medicine at the medical school to go to Boston University.

Scholarships at Harvard.—Prize scholarships have been made available in the Harvard University Medical School, Boston, through gifts made recently by Mr. Edward S. Harkness and Dr. Daniel F. Jones. One or two will be awarded to persons entering the freshman class in 1937. Since the scholarships will be open to all students whatever their financial circumstances, the stipend will vary from $100 to $1,000, depending on the financial resources of the recipient. Holders of the scholarships who maintain, during their first year, a high honor record will continue to hold them throughout the medical school course.

Personal.—Dr. John J. Poutas, Newton, assistant director of communicable diseases in the state department of health since 1934, has been appointed health officer for the Connecticut River Valley District to succeed the late Dr. Harold E. Miner, Holyoke.——The gold medal of the American Roentgen Ray Society for the outstanding exhibit at its annual meeting was awarded to Drs. Aubrey O. Hampton and Jacob Maurice Robinson, Boston. Their exhibit was entitled "The Iodized Oil Demonstration of Rupture of the Intervertebral Disk into the Spinal Canal with Special Reference to Unilateral Lumbar Lesions Accompanied by Low Back Pain with Sciatic Radiation."

Medical Historical Pageant.—The Boston Medical History Club presented a medical historical pageant at the Boston Medical Library, November 16. The characters of the following were portrayed by students of Tufts College Medical School:

Founding of Medical Schools
John Morgan, 1735-1789.
Benjamin Rush, 1745-1813.
Daniel Drake, 1785-1852.
Surgery
Philip Syng Physick, 1768-1837.
Valentine Mott, 1785-1865.
Joseph O'Dwyer, 1841-1898.
Experimental Medicine
William Beaumont, 1785-1853.
Alexis St. Martin.
The New Humanity
Marie Elizabeth Zakrzewska, 1829-1902.
Linda Richards, 1840-1911.
Preventive Medicine
Walter Reed, 1851-1902.
William Crawford Gorgas, 1854-1920.

MICHIGAN

Highland Park Physicians' Club.—The eleventh annual clinic of the Highland Park Physicians' Club will be held at the Highland Park General Hospital, December 2. The following program will be presented:

Dr. James E. Davis, Detroit, Malignant Lesions of the Cervix Uteri.
Dr. Arthur J. Bedell, Albany, N. Y., General Vascular Lesions as Seen in the Fundus.
Dr. Frederick F. Tisdall, Toronto, Ont., Canada, The Mineral and Vitamin Requirements of the Child.
Dr. Charles Anderson Aldrich, Winnetka, Ill., Clinical Observations on Grip.
Dr. Louis J. Harris, Toronto, Indications for Cesarean Section.
Dr. Herman L. Kretschmer, Chicago, Treatment of Bladder Neck Obstruction by Transurethral Resection.
Dr. Dean D. Lewis, Baltimore, Acute Pancreatitis.
Dr. George W. Crile, Cleveland, The Thyroid Gland.
Dr. George M. Curtis, Columbus, Iodine as Related to Thyroid Disease.

Joseph M. Hackett, mayor of Highland Park, will give the address of welcome at the banquet in the evening at the Book Cadillac Hotel and Dr. Crile will discuss his recent African expedition.

Society News. — The first annual banquet of the Grand Rapids Society for the Hard of Hearing, October 27, celebrating National Hearing Week, was addressed, among others, by Dr. Austin A. Hayden, Chicago, on "The Conservation of Hearing." A motion picture entitled "The Social Agencies of the Grand Rapids Community Chest" was shown.——Dr. Clyde K. Hasley, Detroit, discussed "Treatment of Malignancies of the Skin and Mucous Membranes" before the Calhoun County Medical Society in Battle Creek, November 3.——Dr. George M. Curtis, Columbus, Ohio, addressed the Academy of Surgery of Detroit, November 12, on "Experimental Studies—Stomach Motility as Related to Gastro-Intestinal Diseases."——Dr. Frederick B. Burke, Detroit, addressed the Ionia-Montcalm Counties Medical Society at Ionia, October 13, on the basic science law.——At a meeting of the Detroit Pediatric Society, November 4, Dr. Louis H. Newburgh, Ann Arbor, spoke on "The Overweight Child."——Dr. John A. Hookey, Detroit, discussed "Treatment of Eczema" before the Lenawee County Medical Society, October 20.

Public Health Meeting.—The sixteenth annual Michigan Public Health Conference was held in Lansing, November 11-13, with Dr. Clyde C. Slemons, state health commissioner, presiding. The following program was presented:

Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., Syphilis as a Public Health Problem.
Dr. Clara M. Davis, Winnetka, Ill., Science and Common Sense in the Feeding of Children.
Dr. James D. Bruce, Ann Arbor, The Michigan Program for Professional and Public Health Education.
Dr. Carl V. Weller, Ann Arbor, Cancer.
Lon W. Morrey, D.D.S., director, bureau of public relations, American Dental Association, Chicago, Mouth Hygiene.
Leslie C. Frank, sanitary engineer in charge, office of milk investigations, U. S. Public Health Service, Washington, D. C., Milk Control.
Dr. Carey P. McCord, director, bureau of industrial hygiene, Detroit Department of Health, Industrial Hygiene.

One evening session was addressed by Dr. Parran on "Future Trends in Public Health" and another by Joseph R. Hayden, Ph.D., professor of political science, University of Michigan, "The Philippines in Transition." The meeting concluded with a symposium on communicable disease Friday morning.

MINNESOTA

Outbreak of Diphtheria.—Twenty-nine cases of diphtheria with five deaths were reported in an outbreak in Minneapolis between October 1 and October 25, according to the newspapers. Only about 15 per cent of the city's school children were immunized against the disease at the time of this report, but plans were being made to launch an antidiphtheria campaign.

Society News.—Dr. Theodore Diller, Pittsburgh, gave a lecture at the Mayo Clinic, Rochester, October 22, on "Human Credulity as Illustrated by Witchcraft."——The Stearns-Benton Counties Medical Society was addressed, October 22, among others, by Drs. Alfred W. Adson, Rochester, diagnosis and treatment of trigeminal and glossopharyngeal neuralgia, and Charles B. Wright, Minneapolis, activities of the American Medical Association; Dr. Wright is a Trustee of the Association.

Public Health Meeting. — At the annual dinner of the Minnesota Public Health Association in Minneapolis, November 13, Dr. Horton R. Casparis, professor of pediatrics, Vanderbilt University School of Medicine, Nashville, was the guest speaker. Dr. Charles H. Mayo, Rochester, president of the association, was toastmaster. Other speakers included Dr. Caroline Hedger, Elizabeth McCormick Memorial Fund, Chicago, and Miss Frances Brophy, New York, field adviser of the National Tuberculosis Association. A Christmas Seal institute opened the all day session, marking the thirtieth anniversary of the introduction of the seal into the United States. Dr. Olaf J. Hagen, Moorhead, was elected president.

Ex-Convict Shokunbi Given Suspended Sentence. — Samuel P. Shokunbi, alias Samuel Kojoe Pearse, pleaded guilty, October 8, to practicing healing without a basic science certificate and was sentenced to sixty days in the St. Paul Workhouse; the sentence was suspended and he was placed on probation for one year. Shokunbi specialized in the sale of an Herb Tonic, a Gall Stone Remover and a Female Regulator, at prices varying from $2 to $5 per bottle. The defendant was arrested in May 1927 at St. Louis on a suspicion of robbery, and in July 1927 he was sentenced under the name of Samuel Kojoe Pearse to four years at hard labor in the penitentiary at Leavenworth. This sentence was imposed in the U. S. District Court at St. Louis, for using the mails to defraud in connection with the sale of medicine. He served twenty-seven months at Leavenworth and was released.

MISSISSIPPI

Society News.—At a meeting of the Delta Medical Society in Belzoni, October 14, the speakers included Drs. Bernard H. Booth of Drew, on "The Common Cold and Its Treatment," and Henry King Wade, Hot Springs National Park, Ark., "Gonorrheal Epididymitis and Its Treatment."——The November meeting of the Central Medical Society will be addressed by Drs. Laurance J. Clark, Vicksburg, on pneumonia, and George W. F. Rembert, Jackson, coronary thrombosis.

NEW YORK

Personal.—Dr. Frank Reynolds, Syracuse, was honored at a testimonial dinner October 15 on his retirement from the staff of the Crouse-Irving Hospital, with which he has been associated since its founding in 1912.——Dr. Samuel W. Hamilton, White Plains, assistant medical director of the New York Hospital, Westchester Division, has resigned to become director of a hospital survey for the National Committee for Mental Hygiene. Dr. James H. Wall, a member of the hospital staff since 1928, has succeeded Dr. Hamilton.

Cancer Crusade Week.—The governor proclaimed the week of November 1-7 as Cancer Crusade Week. The proclamation directed attention to the 18,000 deaths from cancer annually in New York and urged cooperation of all agencies to encourage early diagnosis and treatment. A cancer committee pointed out that New York has been a pioneer in the fight against cancer, having had the first special cancer hospital in the United States, the first free home for incurable cancer patients, the first state cancer institute, the first municipal cancer hospital, the first self-supporting cancer educational committees, the first rural diagnostic and treatment cancer clinic, the first national cancer fighting organization, the first international conference on cancer control, at Lake Mohonk in 1926, and publication of the first medical journal devoted to all aspects of the disease.

Society News.—Dr. Frederick S. Wetherell, Syracuse, addressed the Otsego County Medical Society, October 14, in Cooperstown, on "Surgery of the Sympathetic System as Related to the Problems of General Practice."——Dr. Israel S. Wechsler, New York, addressed the Medical Society of the County of Rockland at Letchworth Village, Thiells, October 14, on "Neuritis: Etiology and Management."——At a meeting of the Dutchess County Medical Society in Poughkeepsie, October 14, Dr. Maximilian A. Ramirez, New York, discussed allergy.——Dr. Russell L. Cecil, New York, addressed the Niagara County Medical Society, October 13, on pneumonia.——Drs. Charles H. Baldwin and Joseph J. Witt, Utica, addressed the Oneida County Medical Society, October 13, at Broadacres Sanatorium, on "Tuberculosis of the Bones and Joints" and "Tuberculosis in Children" respectively.——Dr. Silas J. Banker, Fort Edward, recently resigned as secretary of the Washington County Medical Society after thirty years of service. Dr. Denver M. Vickers, Cambridge, succeeded him.

New York City

Hospital News.—Dr. Bernhard Dattner, Vienna, lectured at Mount Sinai Hospital, October 7, on "Nervous Manifestations of Alimentary Hypersensitivity."——Dr. Robert E. Pound has been appointed director of the department of roentgenology of the Misericordia Hospital.

District Meeting.—The First District Branch of the Medical Society of the State of New York held its annual meeting at Morrisania Hospital, October 7. Among the speakers were Drs. Clarence H. Smith, on "Unique Methods of Tonsillectomy"; Frederick W. Williams and Thomas J. O'Kane, "Surgical Diabetes," and William Klein, "Treatment of Fracture of Femur."

Academy of Medicine Election.—Dr. James Alexander Miller, professor of clinical medicine, College of Physicians and Surgeons, Columbia University, has been chosen president of the New York Academy of Medicine for a term of two years; Dr. Arthur F. Chace, vice president for three years, and Dr. Lewis F. Frissell, recording secretary for three years. Dr. Miller will succeed Dr. Eugene H. Pool.

Dr. Flexner to Teach at Oxford.—Dr. Simon Flexner, director emeritus of the Rockefeller Institute for Medical Research, has been appointed Eastman visiting professor at Oxford University, Oxford, England, for the academic year 1937-1938. The Eastman professorship was founded by the late George Eastman of Rochester to provide for scholars in American universities to go to Oxford as visiting professors for terms of from one to five years.

Friday Afternoon Lectures at the Academy.—Dr. Hayes E. Martin delivered the third lecture of the Friday afternoon series at the New York Academy of Medicine, November 20, on "The Curability of Cancer of the Tongue by Modern Therapeutic Methods." Following is the list of lectures for December and January:

Dr. John Douglas, December 4, Acute Inflammation of the Gallbladder and the Biliary Ducts.
Dr. Arthur C. deGraff, December 11, Rational Symptomatic Drug Therapy.
Dr. Adolph G. G. DeSanctis, December 18, Common Gastro-Intestinal Diseases of Infants and Children.
Dr. Percy S. Pelouze, Philadelphia, January 8, Gonorrhea in the Male and Its Treatment.
Dr. Readie Garfield Snyder, January 15, Recent Advances in the Treatment of Chronic Arthritis.
Dr. David P. Barr, St. Louis, January 22, Recent Advances in the Endocrine Field.
Dr. Bernard S. Oppenheimer, January 29, Angina Pectoris and Coronary Artery Disease.

Society News.—Drs. Henry S. Dunning and Harold G. Wolff addressed the New York Neurological Society and the section of neurology and psychiatry of the New York Academy of Medicine, November 10, on "The Relation Between Function and Vascularity in the Nervous System" and Dr. Eugene Bernstein, on "The Emotional Factor in Skin Disorders." Dr. William W. Herrick delivered the first Friday afternoon lecture of the academy's series, November 6, on "Early Diagnosis and Treatment of Hypertensive Cardiovascular Disease"; the second was given by Dr. Martin E. Rehfuss, Philadelphia, November 13, on "The Gallbladder Problem."——Dr. Allen K. Krause, Baltimore, addressed the Brooklyn Thoracic Society, October 16, on "Modern Management of Clinical Tuberculosis."——Dr. Jerome P. Webster addressed the New York Surgical Society, October 28, on "Application of Principles of Plastic Surgery in General Surgery."——Drs. Hugo Roesler, Philadelphia, and Dana W. Atchley addressed the Medical Society of the County of Kings, October 20, on "Selected Topics Related to the Roentgenology of the Cardiovascular System" and "Nephrosis with Special Reference to Its Clinical Characteristics, Progress and Treatment" respectively.——Dr. Frank H. Lahey, Boston, addressed the Harlem Medical Association, November 4, on "Thyroid Disease and Hyperparathyroidism." Discussion was opened by Drs. Charles Gordon Heyd, President, American Medical Association; William Barclay Parsons and Henry W. Louria.——Dr. Benjamin Wallace Hamilton has been appointed secretary of the Medical Society of the County of New York to fill the unexpired term of the late Dr. Daniel S. Dougherty.

NORTH CAROLINA

Hospital News.—A graduate course in pulmonary diseases was presented at Lincoln Hospital, Durham, October 15-16, by the North Carolina State Department of Education, Duke University, Durham, and the University of North Carolina, Chapel Hill.

District Meeting.—The Fifth District Medical Society held a meeting at Sanatorium, October 29, at which Dr. Irvin Stein, Philadelphia, was the guest speaker, on "Bone Metabolism." Others on the program were Drs. James W. Tankersley, Greensboro, on "Cancer of the Breast"; Verne S. Caviness, Raleigh, "Heart Pain"; Robert F. Leinbach, Charlotte, "Nervous Indigestion," and John N. Robertson, Fayetteville, "The Common Cold." Dr. Charles F. Strosnider, Goldsboro, president of the Medical Society of North Carolina, made an address at the dinner.

Personal.—Dr. Harry L. Brockmann, High Point, was elected chief of staff of the Burrus Memorial Hospital to succeed the late Dr. John T. Burrus.——Dr. Paul P. McCain, medical director and superintendent of the North Carolina Sanatorium for the Treatment of Tuberculosis, has been appointed manager of a new state sanatorium now under construction at Black Mountain, ten miles from Asheville. Dr. McCain will have charge of both institutions, with assistant managers who will be appointed later, it was said. It is expected that a part of the new hospital will be finished by April 1937.

Society News.—The Tenth District Medical Society held its fall meeting at Asheville, September 23. The speakers included Drs. James K. Hall, Richmond, Va., on "Guilt and Punishment"; James P. Rousseau, Winston-Salem, "Value of Radiation Treatment of Benign Lesions of the Female Pelvis," and Jake G. Woodward, Asheville, "Treatment of Early Syphilis."——Drs. James D. Whaley, Hickory, and Samuel M. Bittinger, Sanatorium, addressed the Catawba Valley Medical Society, Lincolnton, November 10, on diagnosis and treatment of genito-urinary tuberculosis and adult pulmonary tuberculosis,

respectively.——The Southeastern Branch of the American Urological Association is to be held in Charlotte, December 4-5. Dr. Hamilton W. McKay, Charlotte, is president-elect of the branch.

OHIO

Graduate Program at Toledo.—The Medical Institute of the University of Toledo presented its third annual "Postgraduate Day Program" November 6. The guest lecturers were Drs. Otto H. Schwarz and David P. Barr, St. Louis, who spoke on obstetrics and endocrinology, respectively. The program is made possible through a bequest of the board of trustees of the old Toledo Medical College.

Health Commissioners' Meeting.—The seventeenth annual conference of Ohio health commissioners with the state health department was held in Columbus November 4-6. Among the speakers were Drs. Raymond A. Vonderlehr, U. S. Public Health Service, on syphilis; Arthur J. Skeel, Cleveland, essentials of good maternal care, and George M. Lyon, Huntington, W. Va., the school health program as part of the community health program. At a luncheon meeting Thursday November 5 the speakers were Drs. Wilson G. Smillie, Boston, on influenza, and John H. J. Upham, Columbus, President-Elect of the American Medical Association.

Society News.—Dr. Jacob Victor Greenebaum, Cincinnati, addressed the Clinton County Medical Society, Wilmington, October 13, on "Preventive Procedures in Infancy."——Dr. Thomas P. Sharkey, Dayton, spoke on insulin protaminate in treatment of diabetes mellitus at a meeting of the Darke County Medical Society, Greenville, October 16.——Dr. George I. Nelson, Columbus, discussed cardiovascular diseases before the Hardin County Medical Society at Kenton, October 15.——Dr. Harry E. Le Fever, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, October 12, on "Common Lesions of the Spinal Cord."——Dr. Louis J. Roth, Columbus, addressed the Morrow County Medical Society, Mount Gilead, October 13, on treatment of syphilis and gonorrhea.

OKLAHOMA

Clinical Conference.—The seventh annual conference of the Oklahoma City Clinical Society was held October 26-29 at the Biltmore Hotel, Oklahoma City. The guest speakers were Drs. Charles Gordon Heyd, New York, President of the American Medical Association, and Webb W. Weeks, New York; Tracy B. Mallory, Boston; George R. Livermore and Willis C. Campbell, Memphis; Hans Lisser, San Francisco; Francis E. Senear and Sumner L. S. Koch, Chicago; James R. McCord, Atlanta, Ga.; Tinsley R. Harrison, Nashville, Tenn.; Waltman Walters, Rochester, Minn.; Charles L. Brown, Philadelphia; Willard R. Cooke, Galveston, Texas; Albert C. Furstenberg, Ann Arbor, Mich.; Wilburt C. Davison, Durham, N. C., and Karl A. Menninger, Topeka, Kan.

PENNSYLVANIA

Society News.—Dr. Ross K. Childerhose, Allenwood, addressed the Lebanon County Medical Society, November 10, on early diagnosis of tuberculosis.——Drs. Eldridge L. Eliason and Lawrence Curtis, Philadelphia, were the guest speakers at the fall clinic of the Lycoming County Medical Society, Williamsport, November 13. Both conducted clinics in the morning; in the afternoon Dr. Eliason spoke on "Deformity in Fracture Results" and Dr. Curtis on "Treatment of Facial Injuries."

Philadelphia

Innovation in Programs for Branch Societies.—The program committee of the Philadelphia County Medical Society instituted a new plan for meetings of branch societies with a symposium on the diagnosis of syphilis, which was presented in turn before each branch. The speakers were Drs. Jefferson H. Clark, on laboratory aspects; Sigmund S. Greenbaum, lesions of the skin and mucous membranes; William Egbert Robertson, cardiovascular syphilis, and Michael A. Burns, syphilis of the nervous system.

Society News.—Drs. Edward T. Crossan and Robert R. Layton Jr., among others, addressed the Philadelphia Academy of Surgery, November 2, on "The Fay Cast in the Treatment of Fracture of the Neck of the Femur."——Drs. Alexander Spencer Kaufman and Irvin Feldman were among the speakers who addressed the Philadelphia Laryngological Society, November 3, on "Intratympanic Thyroxine Injections in Chronic Catarrhal Deafness."——A symposium on the use of analgesia and anesthesia in obstetrics was presented at a meeting of the Obstetrical Society of Philadelphia, November 5. Dr. Charles M. M. Gruber gave a paper on "Pharmacologic Actions of the Newer Barbituric Acid Compounds," which was discussed by Drs. Henry S. Ruth, Lida Stewart Cogill, Jesse O. Arnold, Thaddeus L. Montgomery, Philip F. Williams, Clifford B. Lull and Edward A. Schumann. Dr. Pascal Brooke Bland described visits to European clinics.——A symposium on psychiatry and the criminal insane was presented at a meeting of the Philadelphia Psychiatric Society, November 13, by Drs. Charles A. Zeller, Waymart, and Philip Q. Roche.

Pittsburgh

Society News.—A symposium on infantile paralysis was presented at a meeting of the Pittsburgh Academy of Medicine, November 10, by Drs. Howard H. Permar, Henry T. Price and David Silver.——Drs. William W. Briant Jr., Mount Lebanon, and Paul J. McGuire, Homestead, addressed the Pittsburgh Pediatric Society, November 13, on "Some Extragenital Effects of Ureteral Obstruction" and "Primary Pulmonary Tuberculosis and the Tuberculin Test" respectively. Dr. Alfred S. McElroy reported a case of acute hemorrhage from the throat.

District Meeting on Syphilis.—The Tenth Councilor District of the Medical Society of the State of Pennsylvania met in Pittsburgh November 18 with a program devoted to syphilis. Dr. William H. Guy and his associates gave clinical demonstrations at the Falk Clinic in the morning. After a luncheon at the Hotel Schenley the following program was presented:

Dr. William H. Guy, Modern Treatment of Various Stages of Syphilis.
Dr. Frederick B. Utley, Importance of Recognition and Treatment of Cardiovascular and Visceral Syphilis.
Dr. George J Wright, Manifestations, Sequelae and Treatment of Syphilis of the Nervous System.
Dr. Edgar S. Everhart, Harrisburg, The Part That Can Be Played by the Physician to Stop the Spread of Syphilis.

At a public meeting at the Schenley in the evening, Dr. Guy showed slides of syphilis; Dr. Cornelius C. Wholey spoke on "Mental Conditions and Social Problems Caused by Syphilis," and Dr. Allan J. McLaughlin, U. S. Public Health Service, Washington, D. C., "The Part That Can Be Played by the Public to Stamp Out Syphilis."

TENNESSEE

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million indicate that the highest mortality rate (23.8) appeared for Memphis and that the rate for the group of cities was 11.6. The mortality rate for Memphis for the corresponding week of 1935 was 16.7 and that for the group of cities was 10.8. The annual rate for the eighty-six cities for the forty-five weeks of 1936 was 12.1, as compared with a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

WASHINGTON

Hospital News.—Providence Hospital, Seattle, celebrated its twenty-fifth anniversary recently. Three physicians who served on the original reception committee were present at the jubilee: Drs. Philip von Phul, Sherald F. Wiltsie and Harry A. Shaw, all of Seattle.

Society News.—Drs. Philipp Schonwald and Hale A. Haven addressed the King County Medical Society, Seattle, November 16, on "Atmospheric Causes of Allergic Diseases in Western Washington" and "Operability and Curability of Malignant Tumors Arising from the Brain" respectively. The society was addressed, October 19, by Drs. Paul R. Rollins on "Reduction of Fetal Mortality in Breech Presentations" and Frederick B. Exner, "Benign Tumors of the Stomach."

WISCONSIN

University News.—Marquette University instituted this year a course in medical technology leading to the degree of bachelor of science. The first two years will be spent in the liberal arts college and the last two in practical work in Milwaukee hospitals.

Society News.—Drs. Emil Novak, Baltimore, and John W. Smith, Milwaukee, addressed the Medical Society of Milwaukee County, October 14, on "The Cause and Treatment of Functional Uterine Bleeding" and "Acne Vulgaris" respectively.——Dr. Joseph W. Gale, Madison, among others, addressed the Milwaukee Society of Clinical Surgery, October 27, on "Treat-

ment of Suppurative Pleurisy."——Drs. Frank A. Boeckman, Marshfield, and Merritt L. Jones, Wausau, addressed the Wood County Medical Society, Wisconsin Rapids, August 26, on carbon monoxide poisoning and backache, respectively.——Dr. Thomas O. Nuzum, Janesville, addressed the Rock County Medical Society, Beloit, October 27, on "Diagnosis of Encapsulated Pleural Effusions."

Milwaukee Medical Service Plan.—The Medical Society of Milwaukee County inaugurated a medical service plan for the budgeting of medical and hospital bills, October 20, with Mr. B. B. McKinstry in charge. Patients will be referred to the service by their own physicians, and details of meeting costs will be worked out to fit the individual income. According to a statement issued by the society, the plan is the result of several years' study of the local situation and of similar plans in other cities. Most of the hospitals in Milwaukee have agreed to cooperate with the service. Members of the committee that worked out the plan are Drs. Dexter H. Witte, chairman; Timothy J. Howard; William J. Houghton, Wauwatosa, and Mr. Theodore Wiprud, executive secretary of the society.

Physicians Honored.—Drs. Theodore J. Redelings, Marinette, and Edward Sawbridge, Stephenson, Mich., were guests at a testimonial dinner in Marinette, October 21, honoring them for fifty years of medical service. Dr. Sawbridge has practiced in Menominee County fifty-three years and Dr. Redelings is in his fiftieth year of practice in Marinette. The principal speakers at the dinner were Drs. Ralph M. Carter, Green Bay, past president, and Stephen E. Gavin, Fond du Lac, president of the State Medical Society of Wisconsin. Medals were presented to the two physicians. Dr. John C. Wright, Antigo, was honored at a luncheon given by the Langlade County Medical Society, October 14, marking his retirement from medical practice after fifty-five years. Dr. Wright was for many years secretary of the county society.

GENERAL

Examinations in Dermatology and Syphilology.—The American Board of Dermatology and Syphilology announces that a written examination for Group B applicants will be held in various cities throughout the country April 17, 1937. Oral examinations for Group A and B applicants will be held in Philadelphia, June 7-8, 1937. Dr. C. Guy Lane, 416 Marlborough Street, Boston, is the secretary.

New Surgical Journal.—A new publication entitled "Surgery, A Monthly Journal Devoted to the Art and Science of Surgery," will make its appearance January 1. This journal is not to be the official organ of any group or organization. According to the announcement, it is to be a clinical and experimental journal of surgery with a representation in its editorial board and committee on publications of representatives from the field of general surgery and its specialties, as well as the preclinical medical sciences. Dr. Owen H. Wangensteen, professor and head of the department of surgery, University of Minnesota Medical School, Minneapolis, and Dr. Edward W. Alton Oschner, professor and head of the department of surgery, Tulane University of Louisiana School of Medicine, New Orleans, will edit the new publication.

Clinical and Climatological Society Meeting.—Dr. James E. Paullin, Atlanta, was elected president of the American Clinical and Climatological Association at its annual meeting at Richmond, Va., October 26-28. Vice presidents elected were Drs. John B. Hawes II, Boston, and Ralph H. Major, Kansas City, Mo., and Dr. Francis M. Rackemann, Boston, was reelected secretary. Speakers at the meeting included:

Dr. Benjamin M. Baker Jr., Baltimore, The Arthritis of Bacillary Dysentery.
Dr. Howard F. Root, Boston, Insulin Protaminate in Treatment of Diabetes.
Dr. Frederic M. Hanes, Durham, N. C., Metabolic Studies in Sprue.
Dr. Edgar Mayer, New York, The Dietary Treatment of Tuberculosis —More Recent Aspects.
Dr. Lewis J. Moorman, Oklahoma City, Calcification of the Spleen.
Dr. Alphonse R. Dochez, New York, General Significance of the Etiologic Agents of Upper Respiratory Tract Infection.
Dr. Roy R. Snowden, Pittsburgh, Treatment of the Thyroid Crisis.
Dr. Alfred H. W. Caulfeild, Toronto, The Correlation of Specific Sensitization as It Occurs Clinically in Man and as Induced Experimentally in Animals.

The next meeting will be held at Baltimore in October 1937.

Conference on Hospital Statistics.—A feature of the meeting of the American Hospital Association in Cleveland was a conference on hospital statistics, attended by representatives of national and regional organizations. An analysis of statistical material obtained from about 1,000 hospitals as to bed capacity and number of admissions, presented by Dr. Joseph W. Mountin, U. S. Public Health Service, Washington, D. C., revealed the importance of uniform definitions for the hospitals in filling out questionnaires and for the local and national agencies in the preparation of them. It was pointed out that the use of the manual of the American Hospital Association might ultimately reduce the number of independent questionnaires received from different national associations. The group decided to meet in February in Chicago to consider revision of the definitions for adoption by the various representatives at the meeting.

Thirtieth Annual Sale of Christmas Seals.—The thirtieth annual sale of Christmas Seals will be launched by the National Tuberculosis Association and its component societies Thanksgiving Day. The first sale was held in Delaware in 1907 by Miss Emily P. Bissell, who raised $3,000 to use toward building a hospital for children with tuberculosis. The National Tuberculosis Association was formed in 1904 and now has 1,981 affiliated associations. Listing the milestones in the tuberculosis movement, the association mentions the first fresh air school founded in Providence, R. I., in 1908, and the first preventorium in Farmingdale, N. J., in 1909. Now there are 173 institutions providing preventorium care. New York as early as 1909 authorized the building of county tuberculosis hospitals; now there are almost 200 besides more than 1,000 other federal, state, city and privately owned institutions giving special care to the tuberculous. Michigan was the first state to use the "traveling clinic" to locate isolated cases in rural areas. In 1920 the association formed a committee on medical research, which organized and coordinated the work of individuals and groups. The first "early diagnosis campaign" was conducted in the spring of 1928. Tuberculosis associations are also concerned with the problem of the recovered patient, the first workshop for such patients having been established in New York in 1913.

Society News.—Officers of the Southern Sanatorium Association, elected at the recent annual meeting at Hot Springs National Park, Ark., are Drs. John Donnelly, Huntersville, N. C., president, and Paul A. Turner, Louisville, secretary.——Dr. Edward J. Murray, Lexington, Ky., was chosen president of the Southern Tuberculosis Conference at the recent annual meeting at Hot Springs National Park, Ark., and Mr. James P. Kranz, Nashville, Tenn., secretary.——Dr. Alan M. Chesney, Baltimore, was chosen president-elect of the Association of American Medical Colleges at the recent annual meeting, and Dr. Edward S. Ryerson, Toronto, was installed as president. Dr. Loren R. Chandler, San Francisco, is vice president; Dr. Arthur C. Bachmeyer, Chicago, treasurer, and Dr. Fred C. Zapffe, Chicago, secretary. The next annual meeting will be held in San Francisco, Oct. 24-26, 1937.——Dr. Perceval S. Rossiter, Washington, D. C., was installed as president of the Association of Military Surgeons of the United States and Canada at the recent annual session in Detroit. Vice presidents are Drs. Arthur E. Lord, Plano, Ill.; Frank R. Keefer, Washington, D. C., and Harold D. Corbusier, Plainfield, N. J. Major Gen. Harry L. Gilchrist Washington, D. C., was reelected secretary.——At the annual meeting of the Tri-State Medical Society in Longview, Texas, October 26, Dr. John D. Young, Shreveport, La., was elected president, succeeding Dr. Dunbar R. Baber, Daingerfield, Texas, and Joseph M. Gorton, Shreveport, secretary-treasurer. The next annual session will be held in Shreveport.

Government Services

Expansion Program of Veterans' Administration

When the present program of hospital construction is completed by the Veterans' Administration, there will be available 12,914 additional beds. Of these, 8,993 will be for the treatment of neuropsychiatric patients, 1,576 for general medical and surgical patients, 157 for tuberculosis, and 2,188 for domiciliary purposes, as in soldiers' homes. A total of 3,888 new beds will be added during the current fiscal year under the administration's building project, which provides for additional beds in forty-two of the existing hospitals and the erection of five new facilities. Appropriations made available by Congress Feb. 2 and Aug. 12, 1935, and March 19, 1936, totaled $29,015,420.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 10, 1936.

Report of Committee on Weil's Disease

It is only since the war that Weil's disease (spirochaetosis icterohaemorrhagica) has been identified in this country, but of late it has been observed in an increasing number of occupations. The result is that in July 1935 the government appointed a committee, with Sir Humphry Rolleston as chairman, to report whether the disease should be scheduled as an industrial one under the workmen's compensation act. The committee has now presented its report, recommending that this should be done and giving an important survey of our present knowledge of the disease. The committee points out that, while "Weil's disease" (first described by Weil in 1886) is used as a synonym for infection with Leptospira icterohaemorrhagiae, it is liable also to be used to cover cases of illness not due to this organism. The use of such terms as spirochetosis or infective jaundice might give rise to confusion for the following reasons: 1. Other spirochetes produce forms of disease that might be described as "spirochetosis." 2. Infection with Leptospira icterohaemorrhagiae does not always produce jaundice. 3. Other kinds of infective jaundice, such as epidemic catarrhal jaundice, occur, especially among school children. The nature of the infection was discovered in Japan in 1914 but did not become known in this country until 1916, after outbreaks among troops on the Western Front. Cases have been reported from Germany and Holland. In the latter many have been due to bathing or immersion in canals.

INCIDENCE IN GREAT BRITAIN

Though only now about to be made notifiable in England, the disease has been notifiable since 1924 in Scotland. The number of cases notified between the beginning of 1924 and October 1935 was 424, but about half of these related to schoolchildren and were regarded as epidemic catarrhal jaundice. Of the remaining cases some were doubtful, reducing the number of accepted cases to seventy-seven, twenty-three of which were fatal. The occupations were miners (twenty-five cases), fish-workers (thirty-eight), agricultural workers (six) and miscellaneous (eight). In England and Wales a number of cases have come to light, particularly of late, in sewer workers, miners, farm workers, scavengers, butchers and others. There have also been cases apparently due to bathing or accidental immersion in water. For the decade 1925-1934 deaths registered in England and Wales as due to Weil's disease numbered thirty-seven, of which thirty-two were in males and five in females. In a considerable number no occupational source could be suggested. Outside Scotland the disease is not known to have occurred in miners. In many of the cases the diagnosis was based on clinical observations. It is evident that the true incidence of the disease in this country cannot at present be estimated, but the inference is drawn that most of the cases were of occupational origin.

SOURCES OF INFECTION

The sewer rat is the main carrier of Leptospira icterohaemorrhagiae, but no manifestations of the disease are produced in it. The organism persists in the animal over a long period and is excreted in the urine, from which man is directly or indirectly infected. Moisture appears to be essential for its persistence outside the rat, and man is usually infected by water or slime in places infested by rats, such as mines, sewers, fish-cleaning premises, piggeries and slaughterhouses, or by bathing in polluted water. Thirty per cent of London rats were found to be carriers of Leptospira. It may enter the human body through skin abrasions or the mucous membrane of the nose or alimentary canal (from contaminated food). Dogs may be infected and, as they excrete the organism in their urine, may be sources of human infection. The incubation period varies from four to nineteen days.

SYMPTOMS

There are fever of sudden onset, frequently with rigors, intense pain and muscular tenderness, congestion of the conjunctiva, jaundice, hemorrhagic herpes on the lips, and hemorrhages into the skin and from the mucous membranes. But some of these may be absent. In Holland, in 1932, 61 per cent of the cases were without jaundice.

DIAGNOSIS

There is little to distinguish the disease from acute necrosis of the liver. A mild infection may be mistaken for influenza or rheumatism. The committee therefore says that compensation should not be based solely on clinical evidence. The diagnosis should be based on finding the leptospira in the blood or urine or on a serologic test—agglutination or adhesion (adhesion of the motile bacilli, such as B. coli, to the leptospira in dilutions of the patient's serum). The medical witnesses said that, in view of the practical difficulties of examination of the blood and urine and guinea-pig inoculation, serologic examination will be the most convenient and reliable method.

The Mechanization of Medicine

In an inaugural address at the opening of the winter session at Westminster Hospital, Lord Horder dealt with the mechanization of medicine. As examples of efforts to mechanize medicine, he took the exploitation of instruments of precision, the elaboration of bacteriologic and biologic methods, the commercializing of pharmacology, and the rapid sequence of new machinery in physical therapy. There was good in all these things, but if they were not careful they would overlay and replace the most essential factor in the diagnosis and treatment of disease—the personal contact of doctor and patient. The patient would not save himself from this danger. He had seen most of the rest of life mechanized, so why not medicine? His faith in a piece of apparatus was pathetic. He knew what his blood pressure ought to be. The instrument makers were now dictating standards, as though the doctor's patient might not express individuality even in blood pressure. The doctrinaire attitude toward diet adopted by certain pundits seemed to make a great appeal to many patients. They seemed to think that any day now medicine might discover a standard diet, if it had not done so already. It was the doctor's business to counter all this and to reveal the patient to himself. His whole duty was to examine carefully, explain clearly and watch diligently. If he was of necessity a humanist in former generations, it behooved him to be all the more humanist today.

National Health Program

Addressing an important political meeting, Mr. Chamberlain, chancellor of the exchequer, said that the government would cooperate with the local authorities to secure for the younger generation greater opportunities to improve their physical condition—a need which was particularly great in view of the progressive decrease of our population in sight. This announcement has evoked widespread approval. In a communication to the *Times*, Sir Kingsley Wood, minister of health, said that the time had come when we must look more and more at our national health and the services that are provided from a new angle. There were four main objects to which our national health policy should be directed. First, we must go steadily on with our existing work and increase it wherever desirable. A healthy nation must largely depend on healthy environment. The great effort to improve the housing conditions must be vigorously maintained. The slum clearance campaign is now

about half way through its course. Already 500,000 slum dwellers have gone to better homes. An equally important campaign against overcrowding has just begun. Secondly, we must fill gaps in our health services. There is, for instance, a gap in the provision made for the time when children leave school and the time when they enter employment and national insurance. Another project is to make available to every mother, whatever her circumstances, a competent midwife. Thirdly, we must develop a more positive policy in the matter of health—a policy that not only safeguards against disease but actively promotes health. We should have a much greater development of the facilities for physical recreation and exercise. Our people are living some fifteen years longer than their forefathers, but we must make sure that those longer years are worth living; and life to be worth living must be healthy and vigorous. We should remember that when young people leave school they need more than ever opportunities for exercise and the maintenance of health. The steady growth of open spaces and modern town planning are two of the best signs of the times. It is a very good thing that some millions were spent last year on recreation grounds and swimming pools. We depend too much on drugs and bottles of medicine and not enough on personal hygiene. Fourthly, we must bring home to the people the valuable public health services available and also the value of self equipment for health. Publicity and propaganda are necessary.

Physicians and Air Raid Precautions

Plans for providing antigas instruction for physicians were described by Major Stuart Blackmore, medical adviser to the air raid precautions department of the home office, at a meeting of branch secretaries of the British Medical Association. Of the three forms of bomb used in air attacks—high explosive, incendiary and gas—he placed gas last but only on the proviso that the population was educated and protected and educated in antigas measures. Gas used against an unprepared, uneducated and unprotected population was a quite different matter. The aim of the gas bomb would then be achieved—an effect on the morale of the nation. It was therefore vital that the medical profession should know all about gas, since it was one of the main supports of the national morale. Gas, labeled definitely as a scientific subject, was one of the things a physician would be expected to know about by his patients. As a result of long thought and much deliberation with various representative medical bodies, a scheme had been evolved. Ten physicians had been selected and had attended or were actually attending the Civil Anti-Gas School in Gloucestershire. These ten would be centered in various places throughout the country closely connected with medical schools, because one of their duties would be to train medical students. They would also instruct the practicing physician. For this purpose the machinery of the British Medical Association had been freely offered and gratefully accepted. The air raids precaution department intended to place some forty or fifty trained units in various localities. Each unit would draw classes from an area of from 10 to 15 miles. Then the unit would be shifted to another locality and the procedure repeated. Nothing less than twelve hours' instruction was likely to be sufficient. Major Blackmore suggested six periods of two hours each, one hour of theoretical and one hour of practical instruction. Whether that instruction took place six days in succession or one day a week or a fortnight was a matter of local arrangement. The government would provide the instructors and equipment free of charge. The maximum in a class should be sixty, but from the point of view of practical instruction from thirty to thirty-five was a better number. A series of handbooks on the subject had been published by the government, of which one was clinical and designed for the medical profession. Gas masks would be available during the course. Mobile gas chambers, of which some thirty-five or forty were already scattered about the country, would be available for instruction. The response to the scheme had been overwhelming and it would be necessary to increase the number of medical instructors.

New Altitude Record

The air ministry announces that a new high altitude record has been made by Squadron Leader Swain, who attained a height of 49,967 feet, breaking the previous record, established in August, by 1,269 feet. A sealed pressure suit enabled the pilot to remain very high for nearly two hours while he endeavored to attain the maximum height possible. The minimum pressure observed was 92 mm. of mercury and the lowest temperature —49.8 C. In the *British Medical Journal* Group Captain G. S. Marshall of the staff of the Central Medical Establishment of the Air Force has made the following commentary on the performance: Human beings are adapted to an air pressure of 15 pounds to the square inch but their tolerance is such that they can live, if doing no appreciable physical work, at an atmospheric pressure a little more than half this. At a height of 18,000 feet the atmospheric pressure is one-half that at the ground level and therefore the oxygen pressure is insufficient for full human activity and so has to be supplemented either by increasing the percentage of oxygen in the air inspired or by increasing the pressure within the subject's lungs. The former is the most practicable but, even when carried to the limit of breathing pure oxygen, is inadequate for altitudes much exceeding 43,000 feet. At this height breathing pure oxygen is physiologically comparable to breathing air at 15,000 feet, usually regarded as the safe limit for flight without oxygen. Beyond 43,000 feet some means of artificially increasing the pressure in the lungs, either with or without the use of additional oxygen, is necessary. This cannot be done to any useful extent without balancing the pressure within the lungs with that outside them. The subject's immediate atmosphere has to be maintained at least at a pressure equivalent to that of the atmosphere at 43,000 feet. This can be done by subjecting him to a pressure slightly above that of the atmosphere in an air-tight cabin or air-tight suit. A sort of diving suit of highly specialized character is used, in which a pressure previously determined is maintained.

Lord Moynihan's Estate

The gross estate of the late Lord Moynihan is estimated at $1,615,000. He bequeathed $10,000 to the Royal College of Surgeons to found an eponymous lecture, to be given at such dates and under such arrangements as the president shall from time to time determine. To the Leeds Medical School, in memory of his mother Ellen Anne Moynihan, he bequeathed $5,000 to establish an eponymous lecture to be delivered annually, biannually or triannually, as the Faculty of Medicine may decide, by some surgeon not connected with Leeds University, on any subject he may select. After the death of his wife, a week before his own, it was Lord Moynihan's intention to bequeath $5,000 to Leeds University for founding in her memory an Isabella Wellesley Lady Moynihan scholarship to be given to the winner of the Hey (a well known Leeds surgeon of the late eighteenth century) gold medal, which he had already endowed. He died before he could make the necessary alterations in his will, but the family intend to carry out his wishes.

Parallel Evolution

In his presidential address to the British Speleological Society, Sir Arthur Keith brought forward a new theory of the origin of the modern races of mankind. Heretofore anthropologists believed that modern races, black, brown, white and yellow, evolved from a common mid-Pleistocene stock, but recent discoveries in caves were compelling them to recast their ideas. They were now tempted to believe that by the beginning of the Pleistocene period, some 500,000 years ago, the ancestors

of the Mongol, Australian and Negro were already in occupation of the continental areas now inhabited by their descendants, and that after separation each race underwent a similar series of parallel changes, such as reduction of tooth and jaw, enlargement of the brain, and replacement of simian by human markings. In support of this theory, Keith adduced Mongolian, Australian and Negro characteristics observed by him in the skulls of Sinanthropus from China, Pithecanthropus from Java and Kanam man from East Africa. It was necessary to reorientate our working theories. Only the independent evolution of the races of mankind during the whole length of the Pleistocene could explain the known facts. This view deepened the mystery of human evolution, for it implied, as in the past, that the future of each race lay in its genetic constitution. Throughout the Pleistocene the separated branches of the human family appeared to have been unfolding a program of latent qualities inherited from a common ancestor at an earlier period.

Promotion of the Safety of Miners

The report of the Safety in Mines Research Board shows much important work done to promote the safety of miners. For the first time evidence is produced supporting the claim that has been advanced that such increased illumination of the coal face as can be obtained from the electric mains would give greater safety. Progress has been made in the development of protective equipment. During the year, 140,000 hard hats have been supplied to miners. Remarkable figures from a mine working thick seams in South Wales show that in 1933 (when no hats were in use) the injury rate per thousand man shifts worked was 0.79 against 0.075 for 1935, when 85 per cent of those employed underground were equipped with hats. Gloves have been used to an increasing extent, and large numbers of safety boots are in use. The toes and insteps are the parts of the foot most susceptible to injury, but all parts require adequate protection. Eye injuries are among the most serious of nonfatal accidents but can be almost eliminated by wearing properly designed goggles. In certain operations, shin guards, knee pads and elbow pads have proved highly effective in preventing injuries. The knee pads and elbow pads are also of value in preventing "beat knee" and "beat elbow." Safety trousers fitted with removable knee pads are being worn, but some workmen prefer rubber pads sewn into a pocket in the ordinary trousers knees.

PARIS

(From Our Regular Correspondent)

Oct. 15, 1936.

Infections Due to Bacillus Funduliformis

During the past year several papers on generalized infections due to Bacillus funduliformis have appeared. A complete review by Prof. André Lemierre of Paris appeared in the *Lancet*, March 28, and since then two new observations were reported at the May 8 meeting of the Société médicale des hôpitaux by Donzelet, Meyer and Olivier, referred to in a previous letter. At the May 22 session of the same society this type of generalized infection was the subject of three additional communications by Paris internists. The first of these was by Lamy and Fontreaulx on a case of thrombophlebitis of the cavernous sinus with septicopyemia due to Bacillus funduliformis. The patient was a girl, aged 4 years, who was admitted to the service of Professor Debré on account of an acute otitis media. Four days later the signs of a bilateral thrombosis of the cavernous sinus appeared. Cultures from the pus of the ear infection and of the blood revealed the presence of B. funduliformis. The child died two days later, the final clinical picture being that of a meningitis accompanied by jaundice and pulmonary infection. At necropsy a suppurative thrombophlebitis of both the cavernous and the coronary sinus were found, as well as an extensive osteomyelitis of the petrous portion of the temporal bone and body of the sphenoid. The authors did not believe that ligation of the internal jugular vein would appear to be indicated in cases of postanginal or postotitic septicemia, because it would not be able to prevent an endocranial thrombophlebitis due to an organism such as B. funduliformis, which seems to have a special affinity for the venous circulation.

The second paper was by Lemierre and Moreau on a cured case of septicopyemia following tonsillitis and due to B. funduliformis. The patient was a woman, aged 24. The symptoms were so characteristic of B. funduliformis infection that this diagnosis was made before it was confirmed by the bacteriologic examination. The onset was sudden in the form of a severe chill on the fourth day of a severe tonsillitis. The following days, and at irregular intervals, there appeared cycles of chills and high fever, signs of pulmonary infarction and arthritis of the spine. This triad alone left little doubt as to the diagnosis, which found its corroboration by a positive blood culture for B. funduliformis on the sixth day after appearance of the tonsillitis. In spite of the gravity of the complications, the patient recovered. The authors were of the opinion that this was due to the fact that there were only two minute demonstrable pulmonary foci and no empyema. The chief menace in cases of B. funduliformis infection was the existence of multiple pulmonary suppurative foci complicated by an empyema.

The third paper was by Professor Lemierre and three of his associates, Reilly, Heine and Hamburger, and was on ligation of the internal jugular vein in a case of septicopyemia due to B. funduliformis and following tonsillitis. The patient was a girl, aged 16 years, with initial symptoms of an acute tonsillitis followed two days later by repeated severe chills and high fever. There was no evidence of pulmonary foci, but the blood culture revealed, on the fifth day after the onset, the presence of B. funduliformis. As a prophylactic measure against further dissemination, ligation of the left internal jugular vein was performed but was of no avail, death taking place five days later. Three hemocultures had been positive for B. funduliformis during the patient's stay in the hospital. The necropsy revealed the presence of a small amount of pus in both pleural cavities, several foci of pulmonary suppuration, a minute abscess in the deeper portion of the left tonsil and a widespread peritonsillar thrombophlebitis with B. funduliformis in the thrombi. The authors stated that if the internal jugular ligation had been performed at an earlier period of the infection the result might have been different. However, this procedure had improved the prognosis of anaerobic infections but little, according to German authors.

Identity of Bacillus Funduliformis and Fusobacterium Nucleatum

Among the Parisian internists who have studied generalized infections due to B. funduliformis most intensively may be mentioned Prof. André Lemierre, in charge of the large Claude Bernard Hospital for Infectious Diseases, and his associates Grumbach and Reilly. At the June 30 meeting of the Académie de médecine they again called attention to the fact that from the clinical picture alone one is able to recognize a septicopyemia as being due to anaerobic bacteria. These generalized infections appear suddenly after a severe tonsillitis in the form of a triad of symptoms, high fever, pulmonary infarcts (with or without accompanying empyema) and suppurative arthritis. Icterus is less constantly observed but highly significant when present. The lesions occur in such a uniform manner that the specific character of the infection is evident. In the majority of cases the organisms that have been isolated have been anaerobic and gram negative, associated or not with anaerobic streptococci. The difficulty of classifying anaerobic bacteria in general and the frequent occurrence of incomplete

identifications explain why it is impossible to state whether the anaerobes found in these cases belong to one or to several varieties. The authors were able, however, to affirm that the Fusobacterium nucleatum isolated in several cases at Zurich is identical with the Bacillus funduliformis of Hallé, constantly found at the Claude Bernard Hospital in post-tonsillitis septicemias since the original report by Teissier, Reilly and Rivalier.

The Skin Reactions to Tuberculin in Children

A survey has just been made at the clinic of the pediatrician Professor Nobécourt of the tuberculin reactions observed in 1,989 children from 6 to 10 years of age and in 1,776 from 10 to 15 years of age. The detailed statistics appear in an article in the May 6 *Gazette des hôpitaux*. Professor Nobécourt considers the ordinary and intradermal reactions to tuberculin of great value in the detection of tuberculosis in infants and children. One must bear in mind that there are exceptions, such as cases showing positive evidences of the presence of a tuberculous focus with negative reactions and on the other hand one encounters children without any demonstrable focus whose reactions are positive. Every child admitted to the service of Professor Nobécourt in the Hôpital des enfants malades (the largest children's hospital in Paris) is given the ordinary tuberculin skin test on admission and this is repeated at least once a month and finally controlled by the intradermoreaction. The conclusions reached from this study of 3,765 children between the ages of 6 and 15 years, are as follows:

1. The percentage of positive skin reactions is already high during the seventh year. It increases but little between the ages of 7 and 10 years but markedly between the tenth and fifteenth years. During the seventh year it is more marked in girls than in boys. Between the tenth and the fifteenth year it is about the same in intensity in the two sexes. Tuberculous infection appears to occur especially often before the age of 7 years and between the tenth and fifteenth years. Before the age of 7 years it is observed more frequently in girls than in boys, while between 7 and 10 years the reverse is true. From 10 to 15 years the incidence is the same in the two sexes.

2. The percentage of active tuberculous foci is relatively low during the seventh year, being higher in girls than in boys. It increases little from the seventh to the tenth year in boys and to the thirteenth year in girls. Definite increases occur in boys during the eleventh and twelfth years, whereas in girls this is observed during the fourteenth and fifteenth years. During the latter, the percentage is higher in girls than in boys.

3. It is evident that age and sex have a distinct influence on the percentage of positive skin reactions to tuberculin and of active tuberculous foci. This influence is due to endogenous and exogenous factors of complicated character.

Twenty-Third Annual Hygiene Congress

This year's congress organized by the Society of Public Health and Sanitary Engineering will be held in Paris from the 19th to the 22d of October at the Pasteur Institute. The secretary of public health and Professor Leclainche (president for 1936) will preside. There will be a symposium on the organization of a service of epidemiology (human and veterinary), on associated vaccinations (human and veterinary), on the teaching of hygiene in the veterinary schools and on the services which veterinarians can render in public health efforts. Professor Levaditi of the Pasteur Institute will read a paper on the ultraviruses, and there will be papers on our present knowledge of disinfection and also on the protection of civilians against toxic gases employed in warfare. The Society of Medical Meteorology will hold a special session on October 21 during the congress. Those desiring to attend this congress can obtain all information through Dr. Dujarric de la Rivière at the Pasteur Institute.

Commercial Exploitation of Pharmaceutical Preparations by Physicians

A bill was introduced during the last session of the chamber of deputies with the object of forbidding any unethical relations between the exploiters of pharmaceutical preparations and any licensed physician. The latter will not be permitted to give free or paid consultations in any establishment where drugs are sold unless the physician owns such a store. The subleasing of a store or office by a physician to any one not practicing medicine for the purpose of exploiting some pharmaceutical preparation is also forbidden. The object of the proposed law, as explained by Dr. Cousin, a Paris deputy, who introduced the bill, is to put a stop to practices now existing in France which are unworthy of the dignity of the medical profession. Many physicians allow their names to be employed as recommending certain drugs because this endorsement greatly aids their sale. It has been proposed to found an "Order of Physicians" in France because it would be easier to discipline those guilty of unethical methods of advertising. Thus far but little progress has been made in this direction although the need of stricter control of those who utilize the radio, weekly journals published by drug houses and similar methods is generally recognized here.

Professor Gosset Honored

Prof. Antonin Gosset, one of the two heads of the surgical department of the Paris Medical School, was recently elected a fellow of the Academy of Sciences, a much merited honor. In order to celebrate the event, a number of assistants and colleagues of Professor Gosset are subscribing to a fund with which a sword (as is the custom on such occasions in France) will be presented to the new academician.

BERLIN

(From Our Regular Correspondent)

Sept. 21, 1936.

The Medical Führer and Unlicensed Practitioners

The national führer of medicine, Dr. Wagner, has recently expressed himself anew on the question of unlicensed practitioners. University professors have generally assumed more favorable attitudes toward the new state, but there are still recalcitrants on whom the National Socialist revolution seems to have made no impression. In discussing the relation of biologic medicine to school (regular) medicine, Wagner stated that the procedures of regular medicine should not be disparaged and that it was not intended to substitute for regular medical knowledge and skill the untried therapeutic methods of biologic medicine. Then too there are the biologic fools, the acquisitive knights-errant of conjecture and the visionaries. Nature cure medicine must be housed within the structure of regular medicine. Every doctor should be a biologic physician and the formal title "biologic physician" should be done away with. The unrestricted practice of medicine (kurierfreiheit) and National Socialism can never be made to harmonize. Unlicensed practitioners should not be allowed to treat the sick. (This new official attitude represents a virtual reversal of that which until quite recently was so strongly maintained.) After a certain set date no new candidates will be permitted to become healing practitioners (heilpratiker). This will leave from 4,000 to 5,000 such practitioners, none of whom are licensed physicians, still free to use what methods they please.

The foregoing statements, emanating as they do from the highest official medical sources, become the more interesting when it is considered that the number of lay practitioners in the German reich, according to the almanac of health statistics, has continuously increased in recent decades. The official figures are given in the accompanying table.

Moreover, the Heilpraktiker's League recently undertook a purgation of its membership and expelled all those practitioners who refused to demonstrate their qualifications before an examining board. At present the organization numbers around 5,500 members.

It is further interesting to note in this connection that an exposition in honor of the centenary of the popular healing movement in Germany was held at Nuremberg last June under the patronage of the local district leader of the party, Julius Streicher. Simultaneously, an extremely well attended get-together festival of the Nature Cure organizations was held. The exhibits consisted for the most part of charts and mechanical materials, all serving to illustrate how man is disorientated by civilization and how "the mediator between nature and the human organism is the blood." Manufacturers connected with

Lay Practitioners in the German Reich

Year	Number of Lay Practitioners	Number per 10,000 Population	Number per 100 Physicians
1870	670	0.16	4.9
1887	1,713	0.36	10.8
1909	4,468	0.70	14.6
1930	12,942	2.01	27.4
1934	14,266	2.19	30.2

the nature cure movement and several other groups also exhibited at this exposition. Among the dicta that stared one in the face from the walls of the heilpratiker's exhibit was this: "If medicine were a science, the sick would be in a bad way."

It is a further significant fact that the Paracelsus Institute of Nuremberg, a center of nature medicine, has at its head that same Dr. von Brehmer who not so long ago attained notoriety by his alleged "discovery" of the causative agent of cancer. This "discovery," as previously reported (THE JOURNAL, February 1, p. 394), was rejected both by the official opinion of the national bureau of health and by the foremost workers in the field of cancer research. Another of the signs read: "Not brilliant diagnoses—healing results, the patient demands health," and below it there appeared, as illustrative material, four paradoxical enough photographs depicting the consulting room of a heilpratiker wherein he is shown testing, one after another, the constitutions of his patients and forthwith diagnosing diseases of the eye and evaluating conditions of the hands and nails. He is also portrayed as determining the condition of all the viscera by auscultation. And the foregoing are only a few samples.

From a perusal of the various sections of the new "penal code" that is about to become law, one gleans that so far as the government is concerned the public health is to be better protected henceforward than by these still surviving fantastic methods of quackery. For example, the section entitled "Offenses Against Public Health" provides, among other things, that any person who violates the ordinance governing the dissemination of infectious disease shall be henceforth liable to a jail sentence or even to a penitentiary sentence. Similar severe penalties apply to a person affected with a venereal disease who shall contract a marriage or who shall indulge in coitus. There is also a strict prohibition of any traffic in food products that may be injurious to health. The latter clause is made to cover the unhygienic packing, storage or transport of foodstuffs and is particularly aimed at the prevention of those cases of food poisoning which result not from human agencies but from natural influences such as decomposition. The penalty for supplying alcoholic beverages to drunken persons in a saloon or retail liquor store has been increased to two years imprisonment. Spirituous liquors or beverages containing a large content of such liquors must not be dispensed to persons under the age of 18 years for their own use. Other alcoholic beverages cannot be dispensed to a person under the age of 16 for his own use excepting in the presence of his parent or guardian.

Damage to Liver from Caffeine During Pregnancy

For many years the Berlin anatomist Professor Stieve, formerly of Halle, has studied the action of caffeine on the organism. Recently he discussed before the Berlin Medical Society the results of experiments with hepatic alterations in both pregnant and nonpregnant rabbits. The same breed of rabbits was used throughout. Caffeine was administered in quantities of 0.1 Gm. per kilogram of body weight, in the form of coffee or as an aqueous solution. In some instances the experiment was carried on for a number of years. It was demonstrated that the nonpregnant animals tolerated the caffeine, whereas for the pregnant animals it acted as a decided toxin. Stieve noted that habituation to caffeine is possible within certain limits.

Only a part of the pregnant animals that were subjected to the influence of caffeine brought forth young, and the young of the entire litter would be much smaller than normal. Besides, some or all of the litter frequently died in the first week of life. The lethal factor in these cases is not made clear. It was established, however, that the animals were underweight and in a completely asthenic state; the liver contained much fat, but this was true of all the new-born animals irrespective of the administration of caffeine. The brood rabbits seldom died but without exception presented marked hepatic alterations consisting of central and peripheral fatty infiltration in the lobules. Single cells were increased from ten to twelve times their normal size and the nucleus-protoplasm relation was shifted. Kupffer's stellate cells were completely uninvolved in the degenerative processes. At the end of the gestatory period the liver may resemble a field of débris. Even severe disturbances are still reparable. If the young soon die, regenerative processes set in at once in the bile ducts and in the capillaries. Thus it has been proved by these experiments that the liver of pregnant rabbits possesses a distinct hypersensitivity to caffeine. These experimental observations are interesting, but they should not be considered applicable to man until investigated further.

Health Service in the Invalid Insurance

As every one knows, there is in Germany in addition to the sick insurance the equally compulsory invalid insurance, which in addition to benefits for the aged maintains a health service. A financial statement of this service for 1935 has just been published. The gratifying increase in the amount of the contributions received made it possible to expend 50,000,000 reichsmarks for this health service during 1935. Cases of illness involving legitimate claims for treatment by the invalid insurance reached a high figure, in excess of 500,000 in 1930, but for 1933 the corresponding figure stood at 124,000. In 1934 the number increased to 153,000. During the last year there was further increase to more than 200,000. Particularly prominent numerically among these cases are epidemic diseases, tuberculosis, venereal diseases, rheumatism and cancer. In addition to funds disbursed for medical service, substantial sums were in certain instances allocated for the prevention of premature invalidism and for the promotion of sanitary conditions. Among other accomplishments there was the extension of direct treatment in sanatoriums, hospitals and convalescent homes to 18,000 children and youths. The national insurance law further provides that the existing insurance institutions of the various German states may invest a part of their capital in community projects. This policy is in line with two principal aims: amelioration of the housing shortage situation and promotion of the fight against tuberculosis, especially by reducing the possibilities of infection. According to the report, 544,000,000 reichsmarks had been invested in this manner by the end of

1935. During the same year expenditures for the foregoing purposes amounted to 16,700,000 marks; that is, nearly twice the corresponding figure for 1934. In addition, the insurance organizations have indirectly contributed substantial sums for the construction of dwellings. Around 14,100,000 marks went for the purchase of mortgage debentures, and loans of 13,000,000 marks were granted for the construction of homes for working class families.

BELGIUM

(From Our Regular Correspondent)

Sept. 10, 1936.

A Dental Program for the Schools

Dr. Watry, who has had experience in the Antwerp schools, recently proposed the following plan for a school dental service: 1. Buccodental disturbances are so prevalent among the school population that only the smallest proportion of pupils remain unaffected by them. Ordinarily the seriousness of these disorders is such that one third of the children are in danger of severe complications with attendant pain and inflammations and hence require immediate treatment. 2. The dental service as it now functions is desperately inadequate in that it tends to minimize the most important two factors in a successful campaign against the scourge of dental caries. The present services attempt, to be sure, to proceed first to a treatment of the lesions presented by child patients. But the incidence of these lesions is so great that, in order fully to discharge its duties, the dental service of any particular school would require for personnel, equipment and expenses generally a sum of money far in excess of that which even the wealthiest and most open-handed administrative body would be disposed to allocate for this purpose. 3. A study from the etiologic point of view of the majority of the buccodental disorders presented by school children leads to a clear enough understanding of the rôle to be assumed by the stomatologist in the dental service as it should be. This concept is based on the following points: (*a*) Stomatologic inspection in the schools should be founded, above all, on preventive medicine and oral hygiene. The effort must be made to suppress the predisposing and efficient causes of the lesions before the latter have been produced. (*b*) Special instruction for the child, the parents and the teachers is indispensable. The school physicians should find their most valuable collaborators in the teachers, since the latter group, being versed in pedagogic procedures, are best qualified to indoctrinate the children with the necessary rules of hygiene. It should be further attempted by all possible means to disseminate in the home as well as at school the rudiments of hygiene and to bring the parents to understand the extent of their responsibilities. (*c*) As the first aspect of the service program is wholly medical in character, it must be entrusted solely to physicians who are specialists in stomatology, and each of these should remain in a close community of ideas and plans with his colleagues of the school general medical service. (*d*) While the idea of a physician especially trained for school service is admitted, it is out of the question that such a physician should be entrusted with stomatologic examination. Even if a general practitioner exclusively devoted to the school service could acquire an adequate skill in all the specialties, the task imposed on him would, from a stomatologic point of view, be so formidable, so vast, that to grapple successfully with it would be a physical impossibility, were he at the same time to attempt to devote himself with equal energy to other problems, no less important, that would fall to his share. And this holds true even if he were the most energetic, best intentioned doctor in the world. (*e*) The second or therapeutic phase of the stomatologic service may be introduced according to either of two procedures, each of which possesses its advantages: treatment at the school dental clinic or at the consulting office of the physician. Whichever method is adopted, the organization of the service must be made to satisfy one important condition: it must place at the disposal of the staff resources commensurate with the needs. Thus each physician will be able comfortably and without danger of being swamped with work, to furnish proper attention to all the children who present dental disturbances, and by "proper attention" is meant such as conforms to all the principles and requirements of modern stomatologic therapeutics.

Detection of Color Blindness

Research studies of the detection of color blindness have been carried out by Messrs. De Laet and Van de Calseyde among the personnel of the Belgian navy. Dr. Weekers discussed the results of these investigations before the Royal Medical Academy of Belgium. The speaker declared that these data were of real value, especially to physicians whose duty it was to pass on the fitness of candidates and who accordingly had to be conversant with the best examination methods. The results of these recent investigations parallel in many respects the opinion of the leading ophthalmologic authorities and permit the following conclusions: 1. No one test possesses all the advantages. In selective examinations, therefore, a control by one or several methods, the principles of which differ, should be employed. 2. The pseudo-isochromatic plates of Schaaf, of Stilling and of Ishihara are almost coequal in practical value. Those of Ishihara's test are the better developed and the handier; they permit a quicker and more decisive examination than do the others. The number and the diversity of the plates should be constantly increased in order to avoid any attempt at fraud (which consists in recognizing the plates from memory). 3. The worsted skeins used in Holmgren's test are qualitatively rather insufficient excepting in certain cases of dyschromatopsia. On the whole, the skein test furnishes results identical with those obtained by the various plate tests. Holmgren's test is a meticulously well organized and protracted procedure wherein the examiner's evaluation of the candidate's hesitations may, however, constitute a too subjective element, which may prove a source of error. Hence it would seem advisable to allow other tests to replace the Holmgren. 4. Nagel's anomaloscope provides exact and complete indications; as a rule it clinches the settlement of diagnostic problems and guarantees maximal scientific accuracy. There are extremely rare cases on record, however, in which this instrument has failed to reveal a color blindness which was ultimately detected by one of the other tests. 5. Practical tests of any sort whatever are worthless. They are inequitable in that they fail to submit all the candidates to the same difficult conditions. Such tests are lacking in exactitude, for they cannot combine the diverse circumstances that help to determine the sensorial deficiency of the subject. They are further unsafe in that they afford the candidate too great an opportunity to deceive the examiner by the use of supplementary criteria.

Prevention of Biliary Lithiasis

In the Belgian Society of Pediatrics, Dr. Lorand of Karlovy Vary discussed the possible heritability of biliary lithiasis. Stress should be on avoidance of the causes of the disturbance. These are, on the one hand, cholesteremia, stagnation of the bile and its concentration in the gallbladder; and, on the other hand, excessive intestinal putrefaction, with invasion of the bile ducts by bacilli. According to Solomon and Spearry, cholesterol is chiefly eliminated through the intestinal wall. By measures directed toward the intestine, one can accordingly set up powerful aids to the elimination of this excess of cholesterol and in this the dietary regimen plays the most important part. It should consist of vegetables, salads, fruits and black bread—all nutriment rich in cellulose.

To prevent cholesteremia, the ingestion of animal fats must be avoided with the exception of the milk and butter indispensable to the growth of children. Besides milk, the most suitable and most easily digested fat is olive oil cold from the press. Gustave Singer has explained the cholagogue effect of this oil. It is also an excellent laxative.

A regimen composed of milk, legumes, fruits and black bread together with small quantities of meat and fat not only prevents the formation of an excessive amount of cholesterol but works against constipation, that *primum movens* of all disturbances. Purgations are dangerous, as they inhibit the proper functioning of the intestinal nervous system and of Auerbach's plexus. The best laxative is sodium sulfate with a base of Carlsbad water. According to Loeper and Binet, this acts as a good intestinal disinfectant and in addition it facilitates the elimination of cholesterol.

Lorand considers biliary lithiasis an endocrine disease associated with thyroid or ovarian dysfunction.

BUDAPEST

(From Our Regular Correspondent)

Sept. 26, 1936.

International Congress of Crippled Children

Delegates to the third World Congress of the International Society of Crippled Children from all parts of the world were greeted by the Hungarian members of the congress in Budapest from June 29 to July 4. The first day being a holiday, the members visited the orthopedic section of the new St. John Hospital and the sanatorium at Svábhegy. Paul H. King of Detroit, president of the International Society for Crippled Children, gave an address, after which the congress went to inspect the National Home for Crippled Children. It was a pity that in consequence of a great downpour which occurred during the afternoon the members could not inspect the workshops, which, being in the basement, were filled with water.

The formal opening of the congress took place on the 30th in the delegation of the parliament. Nicholas Kozma, minister of internal affairs, as representative of Governor Horthy, expounded the government's point of view on the affairs of the crippled and dealt exhaustingly with their social problems. The twenty-five official delegates of the different nations then gave their greeting speeches. I. Kopits of Budapest detailed the orthopedic principles for the prevention of deformity, supporting his statements with statistics. Professor Klima of Brno, Czechoslovakia, accentuated the necessity of controlling methods that are to direct the further fate of the crippled. Miss Copeland of New York presented accurate data to show that in America a considerable percentage of crippling must be ascribed to accidents in childhood.

The second "clinical day" was held in the lecture room of Professor Verebélyi's clinic, where Professor Gocht of Berlin emphasized the importance of the teaching of orthopedics and made known the methods practiced at Berlin University. Professor Spitzy of Vienna emphasized the importance of special orthopedic hospitals. Professor Spisic of Zagreb, Yugoslavia, emphasized the rôle of the orthopedic clinics for the treatment of crippled children. Zinner of Budapest summarized the various modern methods of treatment.

The afternoon was devoted to lectures dealing with the hospitalization of the cripple and to the question of how to protect the cripple after the termination of medical treatment and of how to prevent recurrences. The paper read by P. H. Guildal of The Hague, describing the care of the crippled in Holland, made a deep impression on the audience. Dr. Szily, the Hungarian state secretary, opened an exhibition showing the treatment and causes of bodily defects. The huge exhibition will remain open until Christmas.

July 2 the meeting was held jointly with the Hungarian Curative Pedagogic Society. L. Lamy of Paris and H. Radl of Vienna discussed the various methods of curative pedagogy. In the afternoon the chief problem discussed was the training of the cripple for an industrial career. P. Koch of Bratislava, Czechoslovakia, discussed the psychology of the crippled. D. G. Buller, delegate from London, read a paper on the difficulties connected with the placement of crippled persons trained in some trade.

Friday, July 3, the laws for the aid of the crippled were discussed. Every delegate read the pertinent law prevailing in his own country. Miss F. Shirley of Chicago and G. Peto of London pointed out the deficiencies of the laws in each country. In the afternoon the committees submitted their proposals and those of B. Horvath, chief secretary of the congress, for the program of the next congress.

Survey of Budapest Physicians

The number of physicians in Budapest is 2,697, the rate to the population being 1 to 370 persons. There are 291 women doctors. According to age, there are sixty-one who are beyond 70, while most of them are between 30 and 35. There are 1,561 Christians and 1,137 Jews. Thirty-nine per cent of all physicians, men and women, are not married. Four fifths are specialists and only one fifth are general practitioners. Ninety-four per cent of all of them speak German, 33 per cent French, 29 per cent English, 6.6 per cent Italian and 1 per cent Russian. In Hungary a physician who does not live in his own home is not held to be a good doctor. It is thought that since he does not earn enough to buy a house he is not sought for by the people. Only 57 per cent of the physicians have their own household and 40 per cent keep no servants. In Budapest, living is such that everybody must have at least one servant, and in fact even a shoemaker keeps one. Twenty-six per cent of all physicians receive support from their parents, their relatives and even from their children. Thirty-three per cent of all physicians have no telephone, but, what is much more tragic, 17 per cent do not subscribe to even one medical journal. One fifth of all physicians do not possess instruments that they need to carry with them in their medical practice.

Marriages

BENJAMIN LAKE NOYES to Estelle Reid Hutchinson, both of Stonington, Maine, in Bangor, October 2.

OSCAR WILLIAM CRANZ, Kinston, N. C., to Miss Mary Margaret Hudson of Mooresville, August 7.

WILLIAM HOGE WOOD JR., Philadelphia, to Miss Anne Cary Moss of Parkersburg, W. Va., September 12.

MALCOLM T. FOSTER, Fayetteville, N. C., to Miss Helen Coggins of Spartanburg, S. C., August 11.

JAMES ALLEN KENNEDY, Boston, to Miss Audrey Eleanor Bradford of Nashville, Tenn., in August.

EUGENE M. KELLEY, Exeter, Pa., to Miss Helen Patricia Carr of Waterbury, Conn., August 5.

JOHN NEWTON BOWDEN, Mobile, Ala., to Miss Emily Lassigne of New Orleans, August 19.

JOHN WYATT DAVIS JR., Lynchburg, Va., to Miss Clementene Goode of Utica, Ky., August 20.

WILLIAM EZRA DE VOL, Cleveland, to Miss Frances Hodgins of Brighton, Mich., August 15.

MILTON H. ERICKSON, Eloise, Mich., to Miss Elizabeth E. Moore of Detroit, June 18.

FRANK A. PRATHER, Runge, Texas, to Miss Effie Rowland of Karnes City, August 8.

ARTHUR L. ENNIS, Maroa, Ill., to Miss Bonnie Regan of Decatur, August 21.

CARL BERNARD LECHNER, Erie, Pa., to Miss Dolores Tellers at Emleton, July 22.

Deaths

Oskar Klotz, professor of pathology and bacteriology at the University of Toronto Faculty of Medicine, died, November 3, of myelogenous leukemia, at his home in Toronto, aged 58. Dr. Klotz was born in Preston, Ont., Jan. 21, 1878. He received his M.B. degree from the University of Toronto Faculty of Medicine in 1902 and the M.D., C.M. degree at the McGill University Faculty of Medicine, Montreal, in 1906. He took graduate work at McGill University, the Rockefeller Institute in New York, and in Germany at the University of Bonn in 1905, the University of Freiburg in 1908 and the University of Marburg in 1914. From 1905 to 1907 he was demonstrator in pathology and bacteriology and from 1907 to 1909 lecturer in pathology at McGill University. From 1905 to 1909 he was assistant pathologist to the Royal Victoria Hospital and pathologist to the Maternity and Alexandra hospitals in Montreal. In 1909 he went to the University of Pittsburgh as professor of pathology and bacteriology, which position he held until the end of 1920, and during this period he was director of the laboratories of the Mercy Hospital, director of the Magee pathology laboratory, and from 1916 to 1919 consulting pathologist to the United States Bureau of Mines. He was professor of pathology at the Faculdade de Medicina, São Paulo, Brazil, from 1921 to 1923, having been appointed by the International Health Board of the Rockefeller Foundation. In 1923 he was appointed professor of pathology and bacteriology at the University of Toronto. He also became director of the pathology laboratories of the Toronto General Hospital and consulting pathologist to the Hospital for Sick Children. Among the positions held by Dr. Klotz on various commissions, councils and societies were: member of the National Research Council of Canada; member of the Yellow Fever Commission of the International Health Board in 1926 and 1928; joint chairman of the committee for Canada of the International Society for Geographic Pathology in 1929. He was a member of the Academy of Medicine of Toronto, president 1935-1936; American Association of the History of Medicine; American Association of Pathologists and Bacteriologists, president in 1919; American Society of Tropical Medicine; Association of Medical Museums, president in 1919; Canadian Medical Association; Ontario College of Physicians and Surgeons; Royal Canadian Institute; Society for Experimental Pathology, president in 1935, and fellow of the American College of Physicians.

Matthew Augustus De Laney ✠ Brigadier General, U. S. Army, retired, Washington, D. C., died, November 1, at the Walter Reed General Hospital, aged 62, of pyelonephritis and uremia. General De Laney was born in Waymart, Wayne County, Pa., March 6, 1874. He graduated from the Pennsylvania Normal Institute in 1896 and in 1898 received his medical degree from the University of Pennsylvania Department of Medicine in Philadelphia. In 1902 he graduated from the Army Medical School in Washington. He was commissioned a first lieutenant in the medical corps of the U. S. Army in 1901 and passed through the various grades to that of brigadier general in 1932. He served in the Philippines and in Hawaii, and in 1916 he was with the American forces on the Mexican border. During the World War he was in charge of base hospital number 10 and later was detailed as liaison officer with the British War Office. He was assistant executive in the surgeon general's office from 1919 to 1921. From 1928 to 1931 he served as medical adviser in public health and sanitation to Governor Generals of the Philippines Henry L. Stimson and Dwight F. Davis. In 1931 he became assistant surgeon general. In 1933 he was appointed commandant of the United States Medical Field Service School at Carlisle, Pa., where he served until retired in 1936. General De Laney was a fellow of the American College of Surgeons, the American College of Physicians and the American Public Health Association. From 1909 to 1913, during President Taft's administration, he was White House physician. In 1935 he received an honorary degree of doctor of science from the Dickinson College. General De Laney was awarded the Distinguished Service Medal by the United States and the Order of St. Michael and St. George of England.

Williams McKim Marriott ✠ San Francisco, dean and professor of research medicine at the University of California Medical School, died, November 11, of pulmonary embolism following appendiceal abscess, aged 51. Dr. Marriott was born in Baltimore, March 5, 1885. He received a B.S. degree from the University of North Carolina in 1904 and an M.D. degree from Cornell University Medical College, New York, in 1910. He began his teaching career as assistant in chemistry at the University of North Carolina. Subsequently, until he became professor of pediatrics and later dean at Washington University School of Medicine, he taught at Cornell, Washington University and Johns Hopkins. He was a member of the Council on Pharmacy and Chemistry of the American Medical Association from Sept. 23, 1926, to Jan. 1, 1931, and of the Committee on Foods from May 1, 1929, to Jan. 1, 1931. Dr. Marriott was a member of the American Pediatric Society, the American Academy of Pediatrics, the Association of American Physicians, the American Society for Clinical Investigation, the American Society of Biological Chemists, the American Association for the Advancement of Science, and the Society for Experimental Biology and Medicine and an honorary member of the Harvey Society, and a fellow and formerly vice president and regent of the American College of Physicians. He was on the editorial board of the *American Journal of Diseases of Children* and was the author of "Recent Advances in Chemistry in Relation to Medical Practice" and "Infant Nutrition."

Gilbert Fitz-Patrick ✠ Chicago, chairman of the professional committee for medicine, Illinois Department of Registration and Education, died suddenly November 12, aged 63, of coronary thrombosis and chronic myocarditis. Dr. Fitz-Patrick was born in Salem, Ohio, Jan. 19, 1873. He attended the Ohio Northern University in Ada and received his M.D. degrees from the Chicago Homeopathic Medical College in 1896 and the Harvey Medical College, Chicago, in 1899. He was formerly head of the department of obstetrics at the Hahnemann Medical College and Hospital, Chicago. During the World War he was chief of surgery in a base hospital at Camp Gordon, Atlanta, Ga., colonel in the medical reserve corps of the U. S. Army. In 1927 he was a delegate of the Association of Military Surgeons to the Royal Institute of Public Health in Belgium and the following year was a delegate to the first International Congress of Public Health and Hygiene at Cairo, Egypt. He was past president of the Illinois section of the American Society for the Control of Cancer and of the North Side branch of the Chicago Medical Society, and a fellow and governor of the American College of Surgeons. Dr. Fitz-Patrick was attending obstetrician to the Cook County Hospital and the Henrotin Hospital, consulting obstetrician and trustee of the Illinois Masonic Hospital, and member of the visiting staff of the Passavant Hospital.

Frank Dearborn Bullard, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1888; member of the Associated Anesthetists of the United States and Canada; past president of the Southern California Medical Association, the Los Angeles County Medical Association and the Southern California Anesthetists Society; formerly secretary of the Los Angeles Clinical and Pathological Society; at one time instructor of ophthalmology at his alma mater; aged 75; died, September 8, of cerebral hemorrhage.

Theodore Wellington Corwin, Newark, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; member of the Medical Society of New Jersey; at one time commissioner of public health of the city of Newark; fellow of the American College of Surgeons; aged 79; consulting laryngologist to the Essex County Hospital, Cedar Grove, St. Michael's Hospital and the Hospital of St. Barnabas, where he died, September 1, of cerebral embolism.

Otis Hardy Maclay ✠ Chicago; Northwestern University Medical School, Chicago, 1901; member of the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; past president of the Chicago Laryngological, Rhinological and Otological Society; assistant professor of otolaryngology at his alma mater; on the staff of the Wesley Memorial Hospital; aged 63; died, September 5, of coronary thrombosis.

William Henry Fisher ✠ Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; fellow of the American College of Surgeons; on the staff of St. Vincent's Hospital; president of the Academy of Medicine of Toledo, 1900-1901; formerly professor of clinical surgery at Toledo Medical College; aged 66; died suddenly, September 6, of coronary thrombosis.

Effa V. Davis ✠ Chicago; Woman's Medical College, Chicago, 1891; formerly assistant clinical professor of obstetrics at her alma mater and Rush Medical College; owner of the Chicago Maternity Hospital; on the staffs of the Women and Children's Hospital and the American Hospital; past president of the Chicago Council of Medical Women; aged 73; died, October 28.

Karl Ernest Poetker, Portsmouth, Ohio; University of Cincinnati College of Medicine, 1923; member of the Ohio State Medical Association and the Associated Anesthetists of the United States and Canada; formerly city bacteriologist for the city board of health; on the staff of the Portsmouth General Hospital; aged 38; died suddenly, September 21, of heart disease.

Joseph T. De Grange, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1888; member of the Louisiana State Medical Society; for many years physician for the city fire department; chairman of the first aid committee of the local chapter of the American Red Cross; aged 71; died, September 1, of coronary thrombosis.

Camille Peter Brown ✠ New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1912; at one time adjunct professor of gynecology, New Orleans Polyclinic; formerly chief surgeon of the Illinois Central Hospital; aged 51; died, September 6, in a hospital at St. Louis, of brain tumor and carcinoma of lymph glands of the neck.

Clark Burnham, Brooklyn; Hahnemann Medical College of Philadelphia, 1881; member of the Medical Society of the State of New York; formerly on the staffs of the Cumberland Hospital and the Skene Sanitarium; aged 80; died, September 9, in the Mount Vernon (N. Y.) Hospital, of pneumonia following an operation for prostatic obstruction.

William Karg Gray ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; formerly assistant professor of otolaryngology at the Loyola University School of Medicine; for many years on the staff of St. Anne's Hospital; aged 58; died, September 11, at his home in Oak Park, Ill.

Milton Abe Given ✠ East Chicago, Ind.; Northwestern University Medical School, Chicago, 1911; served during the World War; formerly health officer of East Chicago; on the staff of St. Catherine's Hospital; aged 47; died, September 13, in the Michael Reese Hospital, Chicago, of injuries received in an automobile accident.

Robert Myers Donald, Moorhead, Miss.; Memphis (Tenn.) Hospital Medical College, 1904; also a druggist; member of the Mississippi State Medical Association; served during the World War; past president and secretary of the Delta Medical Society; aged 54; died, September 9, in the King's Daughters' Hospital, Greenville.

Henry Franklin De Wolf ✠ Little Rock, Ark.; University of Kansas School of Medicine, Kansas City, 1925; associate professor of dermatology, University of Arkansas School of Medicine; served during the World War; aged 39; died, September 4, in the Baptist State Hospital, of a self inflicted bullet wound.

Robert Hamilton Woodruff, Hackettstown, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; formerly member of the state legislature and local board of health; for many years school physician; aged 61; died, September 1, in the Memorial Hospital, New York, of pneumonia.

James Morehead Whitfield, Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1887; assistant surgeon in the U. S. Navy in 1890; for many years city coroner; in 1904 member of the city board of health and in 1907 city chemist; aged 67; died, September 4, of nephritis.

Samuel McClary III ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1903; formerly assistant professor of surgery at his alma mater; for many years on the staff of the American Oncologic Hospital; aged 59; died, September 20, in the Presbyterian Hospital.

Arnold Henry Bullwinkel, Brooklyn; Long Island College Hospital, Brooklyn, 1913; member of the Medical Society of the State of New York; aged 47; on the urologic staffs of the Swedish Hospital, Kings County Hospital and the Lutheran Hospital, where he died, September 3, of pneumonia.

James Battelle McMillen ✠ Somerton, Ohio; Starling Medical College, Columbus, 1901; member of the board of education and county board of health; aged 66; died, September 12, in the Community Hospital, Barnesville, of injuries received in an automobile accident.

Charles Carson Deal, Auburndale, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1911; aged 59; died, September 15, in the Morrell Memorial Hospital, Lakeland, of injuries received when an automobile in which he was riding overturned.

Charles A. Carter, Indianapolis; Medical College of Indiana, Indianapolis, 1897; was associated with the city and state boards of health for many years, serving as vital statistician for the state board of health for fourteen years; aged 72; died, September 5.

John Edmund Bryant, Haverhill, Mass.; Dartmouth Medical School, Hanover, N. H., 1901; member of the Massachusetts Medical Society; past president of the Essex North District Medical Society; aged 60; died, September 18, of angina pectoris.

Albert Henry Smith, Philadelphia; Medico-Chirurgical College of Philadelphia, 1888; formerly a member of the division of epidemiology of the state board of health; also a druggist; aged 83; died, August 26, of chronic parenchymatous nephritis.

Louis J. Sintzel, Northbrook, Ill.; St. Louis College of Physicians and Surgeons, 1899; for many years health officer of the village of Northbrook; attending physician to St. Anne's Home, Techny; aged 71; died, August 5, of carcinoma of the bladder.

Charles Forrest Seaton ✠ Williamsport, Pa.; Jefferson Medical College of Philadelphia, 1908; for many years school physician; on the staff of the Williamsport Hospital; aged 53; died, September 7, when he jumped from a bridge into a creek.

Louis Rachlin ✠ Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1916; aged 51; on the staff of the Beth Moses Hospital, where he died, September 7, of injuries received when struck by an automobile.

William Fletcher Stone ✠ St. Albans, N. Y.; University of the City of New York Medical Department, 1890; formerly instructor in and demonstrator of anatomy at Cornell University Medical College, New York; aged 73; died, August 14.

Homer Erastus Rich ✠ Vernal, Utah; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; served during the World War; aged 50; died, September 24, of heart disease.

Francis L. Borglum, Prescott, Ariz.; John A. Creighton Medical College, Omaha, 1902; for many years connected with the Veterans Administration Facility, Fort Bayard, N. M.; aged 56; died, September 20, of angina pectoris.

Henry Charles Luck, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1894; served during the World War; aged 66; died, September 10, in the Lakeside Hospital.

William Downing Groff ✠ Nortonville, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1898; aged 70; died, September 19, in the Williamsport (Pa.) Hospital, of cerebral hemorrhage.

Thomas Rene Hyatt, Topeka, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1905; member of the Kansas Medical Society; aged 79; was found dead, August 27, of heart disease.

Thaddeus Alonzo Casey, Guntersville, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the Medical Association of the State of Alabama; aged 75; died, September 6, in Montevallo.

Charles A. Snow, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1892; aged 83; died, August 1, of arteriosclerosis, arthritis, nephritis and uremia.

Luke Henry Crawshaw, Pocatello, Idaho; St. Louis University School of Medicine, 1909; member of the Idaho State Medical Association; aged 56; died, September 5, in a local hospital, of acute appendicitis.

Anne Young, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1898; formerly a medical missionary; aged 66; died, September 30, in the Presbyterian Hospital, of rheumatic heart disease.

Ivyl Clare Bedwell, Olive View, Calif.; University of Nebraska College of Medicine, Omaha, 1923; on the staff of the Olive View Sanatorium; aged 40; died, August 25, of acute myelogenous leukemia.

Ralph Bernard Snyder, Schoolcraft, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; aged 48; died, September 8, in the Bronson Methodist Hospital, Kalamazoo.

Charles Newton Cutler ✠ Plainfield, N. H.; Harvard University Medical School, Boston, 1898; member of the Massachusetts Medical Society; aged 61; died, September 5, of coronary thrombosis.

Wellington James Conover, Evart, Mich.; Milwaukee Medical College, 1900; served during the World War; village health officer; aged 58; died suddenly, September 15, of coronary thrombosis.

William Wood Ritchey, Kansas City, Mo.; University Medical College of Kansas City, 1895; St. Louis College of Physicians and Surgeons, 1896; aged 73; died, September 12, of heart disease.

Charles R. Huckabay, Idabel, Okla.; University of Dallas (Texas) Medical Department, 1901; member of the Oklahoma State Medical Association; aged 64; died, August 20, of coronary occlusion.

Byron Charles Leavitt, Duxbury, Mass.; Harvard University Medical School, Boston, 1887; member of the Colorado State Medical Society; aged 77; died, August 18, of cerebral hemorrhage.

Waldo Henry Sanford, New York; Albany (N. Y.) Medical College, 1896; served during the World War; aged 64; died, September 15, in the Harkness Pavilion, Columbia Medical Center.

Alejandro Ruiz Soler, San Juan, P. R.; University of Maryland School of Medicine, Baltimore, 1906; member of the Medical Association of Puerto Rico; aged 55; died, September 23.

Alvan Lothair Chapman, Hermanville, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1905; veteran of the Spanish-American War; aged 60; died, September 15.

Samuel Cleveland Seay, Birmingham, Ala.; Jefferson Medical College of Philadelphia, 1908; aged 52; died, September 12, in the Norwood Hospital, of cirrhosis of the liver.

Martin George Sullivan, Winchendon, Mass.; College of Physicians and Surgeons, Baltimore, 1903; member of the Massachusetts Medical Society; aged 57; died, September 14.

Alexander Lewis Grant, Los Angeles; University of Edinburgh (Scotland) Faculty of Medicine, 1912; aged 56; died, August 8, of intestinal obstruction and chronic myocarditis.

Edward Joseph Farrell, Berwyn, Ill.; Northwestern University Medical School, Chicago, 1907; health officer of Berwyn; aged 53; died, August 9, in the Berwyn Hospital.

John Stefansson, Winnipeg, Manit., Canada; Manitoba Medical College, Winnipeg, 1911; aged 57; died, September 29, in the Winnipeg General Hospital, of lobar pneumonia.

Robert Scott Miles Jr., Tacoma, Wash.; Minneapolis College of Physicians and Surgeons, 1903; veteran of the Spanish-American War; aged 60; died, August 10.

Emery Thompson ✠ Holden, Mo.; American Eclectic Medical College, Cincinnati, 1893; past president of the Johnson County Medical Society; aged 68; died, August 9.

Martin Wesley Page, Denver; Western Reserve University Medical Department, Cleveland, 1886; aged 74; died, September 6, in the Mercy Hospital, of cerebral hemorrhage.

Sulveanus S. Gabriel, Piqua, Ohio; Baltimore Medical College, 1893; member of the Ohio State Medical Association; aged 76; died, September 8, of coronary disease.

Lawrence Haddon, Haddonfield, Va. (licensed in Virginia under the Exemption Clause of 1895); Civil War veteran; for many years postmaster; aged 92; died, August 4.

William Albert Landgrebe ✠ Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1909; aged 55; died, August 14.

Jessie Wilhelmine Robertson, Tewksbury, Mass.; Tufts College Medical School, Boston, 1911; on the staff of the State Infirmary; aged 50; died, August 5, in Boston.

James Bennett Crane ✠ Kilgore, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1911; aged 54; died, September 12, of heart disease.

Jesse S. Flora, Kokomo, Ind.; Eclectic Medical Institute, Cincinnati, 1892; aged 66; died, September 14, of cerebral hemorrhage and cardiovascular renal disease.

Abram R. Setzer, Richland, Ky.; Kentucky University Medical Department, Louisville, 1906; aged 76; was killed, September 10, when he was struck by a train.

Daniel J. Carey, Chicago; College of Physicians and Surgeons of Chicago, 1895; aged 61; died, September 24, of cholelithiasis, pneumonia and heart disease.

Owen James Bready, Cleveland; Cleveland Homeopathic Medical College, 1903; aged 71; died, September 5, in the Lakeside Hospital, of carcinoma of the stomach.

George Henry Davis, Le Roy, N. Y.; University of Buffalo School of Medicine, 1901; aged 60; died, September 18, of chronic nephritis and coronary thrombosis.

Clarence Morgan Petty, Ida, La.; Memphis (Tenn.) Hospital Medical College, 1906; aged 54; was instantly killed recently when struck by an automobile.

J. M. Willson Cannon, Pocatello, Idaho; Hahnemann Medical College of Philadelphia, 1878; aged 85; died, September 6, in a local hospital, of heart disease.

Bernard Cheston Goldberg, Baltimore; Southern College of Medicine and Surgery, Atlanta, Ga., 1913; aged 52; died, August 31, of coronary thrombosis.

Charles Milton Ford, Kew Gardens, N. Y.; University of the City of New York Medical Department, 1888; aged 73; died, September 4, of heart disease.

Joel Hudson Smith, Jenkinjones, W. Va.; Medical College of Virginia, Richmond, 1933; aged 33; died, August 20, in the Bluefield (W. Va.) Sanitarium.

Elinor Edgar, New York; Cornell University Medical College, New York, 1933; aged 41; was found dead, September 12, of gas poisoning, self administered.

John Hunting Cobb, Binghamton, N. Y.; Albany (N. Y.) Medical College, 1891; aged 71; died, September 7, of diabetes mellitus and chronic nephritis.

Joseph Thomas Sutton, Milburn, Ky.; Missouri Medical College, St. Louis, 1863; aged 95; was found dead in bed, August 2, of arteriosclerosis.

Samuel Cloyd Vaughn, Patton, Mo.; St. Louis College of Physicians and Surgeons, 1902; aged 64; died, August 15, in a hospital at Cape Girardeau.

Adam William Feltmann, Chicago; Jenner Medical College, Chicago, 1896; aged 72; died, September 3, of myocarditis and chronic nephritis.

John Graham, Pembroke, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1886; died, August 7, in the Ontario Hospital.

Jefferson Warren Hawthorne, Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1896; aged 63; died, August 29.

Clarence S. Robinson, Dowagiac, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1889; aged 77; died, September 5.

George Frederick Maddock, Flushing, N. Y.; University of the City of New York Medical Department, 1889; aged 73; died in September.

Oliver Angus McCall, East Aurora, N. Y.; University of Buffalo School of Medicine, 1912; aged 56; died, August 7, of rectal abscess.

Anna G. Sedam-Benner, Cincinnati; Presbyterian Hospital and Woman's Medical College, Cincinnati, 1895; aged 72; died, August 15.

Howard Malcolm Byall ✠ Montpelier, Ohio; Rush Medical College, Chicago, 1884; aged 77; died, September 5, of angina pectoris.

Isidor Davidson, New York; Columbia University College of Physicians and Surgeons, New York, 1904; aged 55; died, September 18.

Raymond D. Pearson, Monroe, N. C.; Medical College of the State of South Carolina, Charleston, 1922; aged 39; died, September 14.

John B. Bates, Verdigre, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 76; died suddenly, August 22.

Silas Nathaniel Jackson, Leavenworth, Kan.; Meharry Medical College, Nashville, Tenn., 1894; aged 66; died, August 4.

James W. Greenwood, Fort Worth, Texas; Dallas Medical College, 1903; aged 63; died, August 11, in a hospital at Dallas.

Hill Everett Pearce ✠ Tarrant, Ala.; Birmingham Medical College, 1908; aged 58; died, September 1, of heart disease.

Arthur Dalton Smith, Mitchell, Ont., Canada; Trinity Medical College, Toronto, 1882; aged 77; died, August 30.

Frank Walter Burns, Pomona, Calif.; College of Physicians and Surgeons of Chicago, 1896; aged 65; died, August 28.

Lee C. Carder, Hull, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; aged 83; died, September 5.

Edgar L. Walker, Gladewater, Texas; Eclectic Medical Institute, Cincinnati, 1889; aged 67; died, August 28.

Mark Dunning, Orangeville, Ont., Canada; University of Toronto Faculty of Medicine, 1891; died, August 22.

Correspondence

HEMOLYTIC JAUNDICE—SPHEROCYTIC ICTERUS

To the Editor:—It is well known that many conditions can produce jaundice through an excessive destruction of erythrocytes; i. e., a "hemolytic jaundice" in the general sense. Also a clear cut hereditary disease, "chronic hemolytic jaundice with splenomegaly," has been recognized for many years, whether in the congenital form of Chauffard-Minkowski or the so-called acquired type of Hayem-Widal. This disease has unusually concise diagnostic criteria, especially the increased fragility of the erythrocytes in hypotonic salt solution, and small erythrocytes (microcytes), which tend to a more spherical form than normal. As Russell Haden has pointed out, this inherited change in form underlies the increased fragility. The disease has long been known under several, often cumbersome, names, and this is perhaps the reason it is often colloquially spoken of by the confusing, more general, term "hemolytic jaundice." Allen Whipple, for instance, has found it necessary in his Combined Spleen Clinic to separate it from less specific forms by the term "typical hemolytic jaundice." It therefore seems desirable to substitute a more illuminating term, as short as possible, and I suggest "spherocytic jaundice," which also has the advantage of an etiologic implication; "jaundice" rather than "anemia" because, as Chauffard pointed out, these patients may not be anemic and may even be more jaundiced than sick. "Spheroidocytic" would be the more accurate, as the cells are far from true spheres; however, recommendation of the shorter term can take advantage of one of the dictionary definitions of the sphere as "a rounded body approximately a sphere." Therefore, as "spherocytic jaundice" is a less unwieldy term, and as the word "spherocyte" already appears in at least one medical dictionary, it seems the preferable one to use. I do not know of either of these terms having been previously proposed; they may well have been, however, as they seem rather obvious. If so, I can only apologize to the true originator for an unintentional plagiarism.

E. B. KRUMBHAAR, M.D., Philadelphia.

CINCINNATI COMMITTEE ON DIABETES

To the Editor:—I have just seen an editorial in THE JOURNAL (October 31, p. 1473) about the New York Diabetes Association. In May 1935 we organized the Diabetic Committee of the Public Health Federation with the approval of the Academy of Medicine of Cincinnati.

We picked a few men from all the hospitals and insurance companies consisting of a committee of about twenty and had a few informal meetings and then finally organized and I will give you a copy of our set up. Since our organization we have been very active and have received $1,100 from two insurance companies to assist us in carrying out our programs.

Last fall we invited Dr. Joslin here and he spoke before the general public in one of the local hotels in the afternoon and before the Academy of Medicine in the evening. The afternoon attendance was phenomenal, as there were over 750 lay people at the meeting. In addition to this we have had a girl telephoning all the doctors in metropolitan Cincinnati to find out the number of diabetic patients in this area and I think we have a pretty good idea; we also have had very extensive newspaper publicity and have run over twenty articles in the newspaper about diabetes. This has all been done under the sponsorship of the Academy of Medicine and the Public Health Federation and there have been no criticisms from the profession. This fall we plan to make a critical analysis of the causes of death for 1935 in Cincinnati of all the patients with diabetes who have died and we are trying to get up a standard history sheet for all the hospitals so that after a five year period we may be able to analyze our data. We also are cooperating with the Cincinnati Better Business Bureau and think we have excluded many of these fake lectures on diet from the public halls of Cincinnati and are going to be on an active campaign against stores who are selling special foods for the diabetic illegitimately.

At the public meeting and at the scientific meeting in the evening, we had a very large exhibit. This year we plan to have more publicity and undertake another public and scientific session. I hope that this note may be of interest to you.

CECIL STRIKER, M.D., Cincinnati.
Chairman of the Committee on Diabetes
of the Public Health Federation.

SALMONELLA SUIPESTIFER NOT THE CAUSE OF HOG CHOLERA

To the Editor:—Salmonella suipestifer is not the cause of hog cholera nor is hog cholera communicable to man. Belief to the contrary excites unnecessary anxiety in communities afflicted with outbreaks of hog cholera. The situation has been aggravated by a recent article in THE JOURNAL (August 1, p. 331) entitled "Salmonella Suipestifer Bacteremia." In the introductory paragraph it was stated that the Salmonella suipestifer organism is "known to be the cause of hog cholera," and that there is "increasing evidence of its definite relationship to human disease." That such an etiologic error with respect to hog cholera should represent the individual beliefs of the three co-authors of the article, and, in addition, should pass your editorial scrutiny, indicates a widespread misapprehension concerning this disease.

Hog cholera is caused by a filtrable virus—a discovery made more than thirty years ago by scientists of the federal Bureau of Animal Industry. The virus is highly species specific. Aside from some dubious results with guinea-pigs, it has never been propagated in species outside the family Suidae.

Salmonella suipestifer is commonly a secondary invader in hog cholera, so commonly, in fact, that it was earlier supposed to be the causative agent and it was accordingly first named Bacillus cholerae-suis. The swine disease produced by it is salmonellosis. Outbreaks of salmonellosis in swine, whether or not associated with hog cholera, have not appeared to induce an unusual incidence of gastro-enteric, pulmonic or septic infections among persons who handle, or dwell in proximity to, the affected animals.

JOHN R. MOHLER, V.M.D., D.Sc., Washington, D. C.
Chief, Bureau of Animal Industry,
U. S. Department of Agriculture.

LONG SERVICE FOR ARTIFICIAL EYE KEPT IN SITU

To the Editor:—Some years ago a patient of mine who lost his eye in the Civil War came in to see me with the artificial eye broken in the socket. It had grown fast and I had to dissect it loose in its entirety. The glass was porous and badly corroded. I asked the patient how long since the eye had been taken out. He thought for a short time and answered that the eye had not been out of its socket even at night for more than twenty-five years.

I do not think this is a record but at any rate it is a long time to wear an artificial eye.

WILFRID HAUGHEY, M.D., Battle Creek, Mich.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PERMANENT WAVE SOLUTION AND DERMATITIS

To the Editor:—A white woman, aged 23, has been a beautician for five years. Three months ago an eczematous dermatitis developed on the medial and lateral aspects of the fingers and one adjacent to the thenar eminence over the wrist joint. The lesions are typically papular, weeping, intensely itching and minutely ulcerating. She presents evidence of a high carbohydrate diet, recent contact with horses, symptoms of a constitutional hepatic dysfunction and a constantly alkaline urine. Thus far the entire local preparations have been exhausted with no effect, including x-ray therapy. At the present time I am employing dicalcium phosphate wafers and dilute hydrochloric acid and am recommending rubber gloves while the patient is at work, coupled with a diet of carbohydrate 60, protein 60, fat 120. What is contained in the commercial permanent wave solutions? If the dermatitis is due to this solution, what could have gone wrong constitutionally after five years of employment? What beneficial effects could I expect by removing her from her employment for one month? What are your suggestions in a case of this nature? There is no evidence of tuberculosis, syphilis or scabies. Please do not publish name.

M.D., Wisconsin.

ANSWER.—The commercial permanent wave solutions contain, among other things, gum tragacanth, linseed gum, quince seed gum, acacia, Karaya gum (a white or gray powder obtained from the sap of a tree grown chiefly in India), boric acid, sodium, potassium and ammonium carbonates, alcoholic keratin, petrolatum and waxes. These substances usually exist in various combinations, depending on the type of preparations used. The Karaya gum is usually employed in the less expensive solutions, the gum tragacanth in the medium priced groups, and the quince seed in the higher priced solutions, along with the other ingredients.

To determine the relationship of the solution to the dermatitis in question, information as to the qualitative composition of the solution used should be obtained from the manufacturer, and patch and scratch tests done with the solution and its respective constituents to determine the offending substances. It is possible that this solution might produce the dermatitis even after five years of employment. The use of the same solution over this period could produce a sensitivity by its cumulative effect as a result of sensitivity developing from a succession of repeated minimal irritations ultimately producing a manifest sensitization in the form of the dermatitis.

Another factor in the production of the dermatitis may reside in the perfume or scent used in some of these preparations. The composition of these perfumes may vary from time to time in different batches of the same preparation and this may have to be investigated, if the preparation is scented.

The contributory rôle of certain foods in producing a sensitive soil and rendering the skin vulnerable to external irritants must also be considered.

If the permanent wave solution is the sole agent in the production of the dermatitis, one should expect a complete recovery by removal of the patient from her employment for one month.

In a case of this type, the patient should first be tested as suggested. The removal of the individual from all contacts that might produce irritation may require a change of occupation. The use of soothing local therapy should be instituted. X-rays, if used at all, should be employed only in cautious, fractional doses. Dicalcium phosphate and vitamins A and D are also of value. The protection of the parts with rubber gloves, if the patient continues work, is excellent. The rôle of foods as agents in the production of an allergic background should be ruled out by appropriate skin testing or elimination diets.

PECK TEST IN PURPURA

To the Editor:—Kindly send me whatever information you have in regard to the Peck test for diagnosis of purpura haemorrhagica.

E. J. WEXLER, M.D., Chicago.

ANSWER.—The Peck test for purpura haemorrhagica consists in the intradermal injection of from 0.1 to 0.2 cc. of titrated snake venom solution. Equal amounts of physiologic solution of sodium chloride are injected intradermally at another comparable site. The test should be read at the end of one hour. The production of a purpuric lesion at the site of injection within a one hour period and a negative control indicates a positive test. An objection to this test may be raised on the grounds that in active and severe cases of purpura haemorrhagica the saline control may be positive, because, in the presence of increased capillary fragility, distention of the skin by physiologic solution of sodium chloride may produce a purpuric lesion. Peck, however, stresses the importance of the test in prognosis (prognostic venom reaction) since it permits a quantitative and qualitative estimation of capillary fragility over a period of time. He has found that patients having a therapeutically induced or a spontaneous remission show a reversal from a positive test to a negative one. Many cases in which the test has been tried have shown a reversal of positive to negative before other criteria of improvement have become apparent. Peck has found that patients with chronic thrombocypenic purpura who are positive before splenectomy will show a reversal a few hours after operation if the patient has had a favorable result from the operation.

The snake venom used in the test is available through Lederle Laboratories, New York. It is important that standardized moccasin venom (Ancistrodon piscivorus) be used. Each 0.1 cc. represents one hemorrhagin unit and different venoms may vary from this standard. The hemorrhagin unit is determined by the amount of moccasin venom necessary to produce hemorrhages in the vascular network of a 3 day old chick embryo.

The test is new and will require more study under varying conditions before its ultimate value can be definitely decided. Peck and his colleagues are doing this and their results will soon be available in medical literature.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 35, was originally treated for syphilis at the Marine Hospital, San Francisco, in January 1932. At that time he had a genital lesion from which a positive darkfield examination for spirochetes was obtained. The blood Wassermann reaction was repeatedly negative. From Jan. 1, 1932, to May 23, 1934, he received thirty-six injections of arsenicals and thirty-eight injections of a bismuth compound. He was advised to discontinue treatment but to have a Wassermann test made every six months for five years. Jan. 12, 1935, he reported another genital lesion, and again spirochetes were found on darkfield examination. There was no history of exposure outside the family. A diagnosis of primary syphilis was made. There is a possibility that this lesion was merely a recurrence, but the adequate treatment received, the repeatedly negative Wassermann reactions and the negative Wassermann reaction at this time point strongly to reinfection. From Jan. 25 to Nov. 22, 1935, he received a total of 4 Gm. of neoarsphenamine in twelve injections and 4 Gm. of a bismuth compound in twenty injections. During this course of treatment the blood Wassermann reaction was repeatedly negative. However, in July 1935 a spinal puncture was done and was entirely negative except for a gold curve suggestive of cerebrospinal syphilis, 0000111000. Reexamination of the spinal fluid April 9, 1936, gave a gold curve of 2223343000, cell count 0, globulin normal, Wassermann reaction negative. Will you kindly outline the future treatment for this case? There are no cardiovascular or neurologic symptoms at present. If printed in THE JOURNAL, kindly omit name.

M.D., California.

ANSWER.—As the inquirer remarks, the second lesion of Jan. 12, 1935, sounds much like reinfection. The statement that there was no exposure outside the family implies that the patient is married. In this connection his wife should be examined immediately for syphilis, if this examination has not already been made.

His treatment since the reinfection (or relapse) has consisted of thirty-two injections given over a period of forty-three weeks; i. e., it has not been absolutely continuous. The dosage of neoarsphenamine employed (an average of 0.33 Gm. per dose) is inadequate for the treatment of early syphilis.

The gold curve obtained at the spinal fluid examination in July 1935 is entirely negative and of no significance; the curve obtained in April 1936 is abnormal but, in the absence of other abnormalities in the spinal fluid, an isolated change in the colloidal curve cannot be interpreted without further observation. The colloidal gold reaction is much more variable and more subject to laboratory error than the colloidal mastic or benzoin reaction.

The future treatment of this case should proceed exactly as if the patient had uncomplicated seronegative primary syphilis, and in accordance with the treatment outline suggested by the Cooperative Clinical Group (Stokes and others, THE JOURNAL, April 21, 1934, p. 1267). This treatment outline employs the continuous (no rest periods) use of alternating courses of an arsphenamine and a bismuth compound. If neoarsphenamine is used, each course should include from eight to ten weekly injections in a dose of from 0.6 to 0.9 Gm. These courses of neoarsphenamine should be separated by somewhat

shorter courses of a bismuth compound than have heretofore been used; e. g., ten weekly injections of bismuth salicylate 0.2 Gm. each. This scheme of treatment should be kept up for the next six months, at the end of which time the spinal fluid should be reexamined, preferably in more than one laboratory, and two or more different colloidal curves should be utilized. If the spinal fluid is actually abnormal at the next examination, the treatment outline must be changed in accordance with the condition found at that time. If, however, it is normal, as is probable, the outline of treatment suggested should be continued for an arbitrary minimum of one year from this point.

URINARY HISTIDINE TEST FOR PREGNANCY

To the Editor:—I am one of the many young practitioners who have sought outlying towns without hospital facilities and who subsist on small fees largely derived from underprivileged patients. I read your editorial (THE JOURNAL, June 27, 1936, p. 2240) on urinary histidine in the diagnosis of pregnancy. I purchased an ounce ampule of Merck's Reagent Bromine, and I wish to use the test, for whatever it may be worth. Would you kindly send me a protocol for this test, especially covering a simple qualitative method? Any information concerning a method of preserving bromine over a period of years would be valuable. I am keeping mine in a glass-stoppered bottle in the refrigerator to begin with.

G. J. POTTER, M.D., Clewiston, Fla.

ANSWER.—Voge in 1929 reported a very simple test for histidine in the urine of pregnant women. He treated 2.5 cc. of urine with 1 cc. of bromine water. A saturated aqueous solution of bromine (bromine water) contains about 3 parts of bromine in 100 of water. This solution is diluted with twice its volume of water for the test. The mixture of 2.5 cc. of urine with 1 cc. of the dlluted bromine water is brought to the boiling point. A positive reaction is indicated by a pink or orange red coloration which rapidly fades. In a negative reaction the original yellow remains. Voge found a positive reaction in twenty-four of twenty-five urine specimens that gave a positive Aschheim-Zondek test. In two cases the Ashheim-Zondek test was negative and the histidine test positive, and in thirty-three other cases both tests were negative. Voge found that normal urine does not give this test, the addition of histidine causing a positive reaction. One objection to this simple test is the often rapid disappearance of the red, so that it is difficult to decide the result. Dark colored urines may make the reading difficult.

Kapeller-Adler in 1933 described a specific colorimetric test for histidine too complicated for the average physician's office. To 2 cc. of urine a 1 per cent bromine solution in 33 per cent acetic acid is added drop by drop until a weak yellow persists. After ten minutes 2 cc. of an ammonia-ammonium carbonate mixture (2 parts of concentrated ammonia plus 1 part of 10 per cent ammonium carbonate solution) is added. This is heated in a water bath for five minutes. A deep blue-violet appears, which increases on cooling. After ten minutes a colorimetric determination can be made, a 1:1,000 standard histidine solution being used. Care must be exercised in adding the bromine solution to avoid an excess. For this purpose a potassium iodide starch solution is used.

Földes in 1935 described a modified Kapeller-Adler test, as follows:

To 5 cc. of urine is added in portions of 0.1 cc. a 2.5 per cent bromine solution in 20 per cent acetic acid. The urine is shaken after each addition of 0.1 cc. of bromine solution. When an orange yellow to orange red appears the bromine solution is added until the color reaches its maximum intensity. The reaction may be recorded as from 1 + to 3 +. If no color appears, the test is negative. With this test the histidine reaction increases with rise in the specific gravity of the urine.

Kapeller-Adler and Schiller found that the quantity of histidine in the urine varies in the same and in different gravid women. It is greater in amount in the second half of pregnancy than in the first. It is increased by a high protein diet. The histidine was found to disappear on the third day post partum. In nonpregnant women and in males, histidine given by mouth is decomposed and does not appear in the urine. The histidine in the urine of pregnant women is partly endogenous and partly exogenous.

The best manner in which to preserve bromine is in a glass-stoppered bottle under a layer of water. The bromine is heavy and remains below the water, which prevents its volatilization. It can be removed as needed by placing the end of a pipet below the water.

The references are:

Voge, C. I. B.: *Brit. M. J.* **2**: 829 (Nov. 2) 1929.
Kapeller-Adler, Regina: *Biochem. Ztschr.* **264**: 131 (Aug.) 1933.
Kapeller-Adler and Schiller: *Klin. Wchnschr.* **14**: 1790 (Dec. 7) 1935.
Földes, Franz: *Biochem. Ztschr.* **283**: 199 (Jan.) 1935.

WHISPER TEST OF HEARING

To the Editor:—Would you please tell me if there is any argument as to the method of testing hearing both as to distance 15, 20 and 25 inches and whisper, forced whisper or spoken voice? The audiometer is, I know, the most accurate. I have occasion to do considerable work in this line and find some difficulty in the variance of tests used. Might I also have a list of the various tests of hearing and references?

M.D., Ontario.

ANSWER.—Even though the human voice cannot be standardized with reference to intensity or quality, when used with certain precautions the test is eminently satisfactory from a practical standpoint. The ability to hear the human voice is, after all, the most essential criterion of the hearing ability. The longer the room used for testing, the better. The patient should stand at one end of the room without touching anything but the floor, not leaning against the wall or heavy furniture. The ear opposite the one being tested should be tightly closed with a moistened finger, and the eyes closed or averted from the examiner. The latter should use unaccentuated whisper or whisper conversation, not forced whisper or forced voice. Best for the purpose is the residual air after an inspiration and expiration. The examiner should approach the patient from the greatest possible distance and note at which point the noise or words are first heard. In the English language the numerals are low pitched, except the sixes and sevens, which are high. It is better to see at which distance the patient first hears low tones and then high tones separately, before combining them, as this often gives a clue to the location of the hearing defect, if any. If unaccentuated whisper is not heard until the examiner is within a few inches of the patient, the unaccentuated conversation may be used and the distance noted at which the voice is heard.

Unless an audiometer is of the phonographic type, it is impossible to test speech with it. The most important hearing tests aside from those made with the voice are the Weber to determine lateralization of sound, the Schwabach for noting the duration of bone conduction, and the Rinne for finding the relation of air to bone conduction in the same individual. Other but less important tests are the Bing, the Politzer, and the Stenger test for simulation of unilateral deafness. Following is a list of some of the references from the literature on the functional testing of hearing:

Bezold, F.: Funktionelle Pruefung des Ohres, 1897, Lehrbuch der Ohrenheilkunde, 1906.
Boenninghaus, G.: Lehrbuch der Ohrenheilkunde, 1908.
Fletcher, Harvey: Some New Methods and Apparatus for Testing Acuity of Hearing, *Laryngoscope* **35**: 501 (July) 1925.
Politzer, A.: Lehrbuch der Ohrenheilkunde, 1908; Arch. f. Ohrenh. **1**: 59.
Sonnenschein, Robert: The Rationale of Tuning Fork Tests, *Ann. Otol., Rhin. & Laryng.* **37**: 309 (March) 1928.

EOSINOPHILIC LEUKEMIA

To the Editor:—Will you kindly let me know the diagnostic criteria of eosinophilic leukemia? How many cases have been reported in the literature? Do you agree with the statement in Price's Textbook of the Practice of Medicine (Oxford Press, 1933) that eosinophilic leukemia is consistent with a very few immature eosinophils in the peripheral circulation? Which of the two is the more dependable sign of immaturity of eosinophils: lobation or the staining of the granules? Is it possible to make a diagnosis of eosinophilic leukemia without examination of a lymph gland section and bone marrow puncture material? Do you agree that as regards the peripheral blood the same criteria should apply as for the other granulocytic leukemia? Please omit name and address.

M.D., India.

ANSWER.—The salient diagnostic criteria of eosinophilic leukemia as summarized from the literature are persistently increased white cell counts as high as 236,000, an unusually large percentage of eosinophils, absence of an etiologic factor to account for the blood picture, a high basal metabolic rate, splenomegaly with but few exceptions, and biopsy evidence of infiltration of the blood-forming tissue with a predominance of eosinophils. The eosinophils in the peripheral blood and the tissues are mostly of the adult type.

There have been about fourteen cases which are grouped in the medical literature as eosinophilic leukemia or persistent hyperleukocytosis with eosinophilia of unknown etiology that satisfy these diagnostic criteria. In ten of the cases reported the disease was chronic in its course, while in four instances the course was acute. Many authorities doubt the existence of a true eosinophilic leukemia because of the predominance of mature forms of eosinophils in the peripheral blood and blood-forming tissue. D. J. Stephen's report, however (*Am. J. M. Sc.* **189**:387 [March] 1935) seems quite convincing. In the case that he studied, bone marrow, spleen, lymph nodes and liver showed definite leukemic changes and a significantly higher proportion of eosinophilic myelocytes to mature eosino-

phils than in other tissues. Myeloblasts were present in the peripheral blood and blood-forming tissue. The clinical and pathologic observations were those of acute leukemia. The author employed the term acute eosinophilic leukemia in view of the predominance of eosinophils in the blood and tissue and to differentiate it from other types of myelogenous leukemia. The lack of neutrophilic myelopoiesis was reflected in the scarcity of neutrophilic myelocytes in the bone marrow, the striking lack of neutrophilic granulocytes in the peripheral blood and in necrotizing inflammatory exudates. The chronic variety is reviewed by M. H. Bass (*Am. J. Dis. Child.* **41**: 1394 [June] 1931). Some of the cases are not clear and their leukemic nature may be debated.

The statement made in Price's book coincides with the data recorded in medical literature.

The more dependable sign of immaturity is the nuclear structure.

It is not likely that a diagnosis of eosinophilic leukemia could be satisfactorily established without some information regarding the blood-forming tissue.

Too little is known about the eosinophil cell for one to be dogmatic. Apparently from the cases reported if such criteria were used many of them could not be classified as leukemia. This subject needs further study. A correct answer cannot be given to the last question on the basis of abstract reasoning.

HAZARDS OF ETCHING INDUSTRY

To the Editor:—In a large industrial plant that has been in existence for a number of years, steel frames were copper plated up to six months ago in the following manner: The raw steel frame went through a water washing, sometimes hot and cold combined, followed by a hot potash bath, again dipped, washed in water and finally placed in an electric cyanide bath. No untoward incidents occurred when this method was employed. Six months ago they began what they called an "etching process," which differed only in that the frame was dipped originally in pure nitric and sulfuric acid for about one minute, after which it was washed in a water bath, and the same process gone through as explained. The cyanide solution was held in wooden tubs lined with tar to prevent any form of leakage. The solution itself was made from cyanide eggs and copper cyanide crystals, obtained from reliable companies with whom they have been dealing for many years. Very recently one of the employees who worked at this dipping-etching process developed an ulceration in his nose, was sent to the hospital and subsequently died of pneumonia. Ten other such employees, working at the same process, were afflicted with minor ulcerations, but no further sequelae occurred. The question was raised as to the probable cause for this resulting condition and ammonia fumes were claimed by some to be the possible offender. When I went through the factory, the smell of ammonia fumes was in evidence but not to a marked degree. Do you see any possible reaction in the etching process that would account for the ammonia fumes? If ammonia is liberated, would it cause nasal mucous membrane ulceration? Is there any other chemical liberated that would be injurious? If any injurious substance is liberated, what could be done to prevent such formation? I may add that they have a ventilating system in the plant to draw the fumes out of the building. Also that the foreman in charge, who has been the chief in that department and who has been constantly employed at this etching process, did not suffer any ill effects as the others who were engaged with him in that occupation. Kindly omit name.

M.D., New York.

ANSWER.—In the usual course of plating it is unlikely that any ammonia would be utilized or produced. However, a combination of the various pungent odors present might suggest the odor of ammonia. In the situation described, it seems appropriate to attach significance to the mineral acids newly introduced. Whenever mineral acids come in contact with cyanogen compounds, hydrocyanic acid may be produced. Despite rinsing in water after submersion in acid, and despite a bath in alkali solution, it is quite possible for some acid to remain on the acid-"etched" surfaces of the metal. Notwithstanding the theory that acid baths will not lead to the presence of acid in the atmosphere as the result of evaporation, it may be recognized that through chemical ebullition some acid may be thrust into the atmosphere. This may combine with cyanogen compounds similarly entering the air from nearby cyanide vats. As a result, additional small amounts of hydrocyanic acid may be produced. The ulceration about the nose as described is a fairly characteristic result of cyanide action, although some ulceration of lesser nature might be associated with the action of either the mineral acids or the alkalis. By way of prevention it is suggested that, if the use of mineral acid cannot be eliminated, the rinsing in water should be more thorough, and if possible the contact with the alkali solution should be extended. Lateral suction for the entrainment of fume from all vats is desirable, together with extensive general ventilation, resulting in frequent air change for the entire workroom. While chief consideration is here paid to cyanogen compounds, other respiratory irritants and ulcerating substances may be found in the mineral acids, in the alkalis, and to a slight extent in the hydrogen evolved in the electroplating process. The specific questions propounded already have been answered. The ventilating system mentioned is likely to be unsatisfactory unless the vats themselves are equipped with intakes, thus entraining the injurious substances near the point of origin. Naturally, hot solutions may be expected to give off a greater quantity of irritating substances than cold solutions.

PAIN IN PARALYSIS AGITANS

To the Editor:—A woman, aged about 67 or 68, has had Parkinson's disease for the last three years. At first she started out with tremors in the fingers and hand, which later extended to the toes and feet. She has grown progressively worse and has had the usual treatment for paralysis agitans. At the present time she takes about one-sixtieth grain (0.001 Gm.) of scopolamine and at night about 1½ grains (0.1 Gm.) of pentobarbital sodium. For the last two years she has complained of pain in the fingers and wrists extending up the arms; also in the toes and feet and in the back of the neck. There seems to be a marked contraction of the tendons of the forearm and hand, and she gets relief by having some one in the family pull on her hands and arms. I have had to give her one-fourth grain (0.015 Gm.) of morphine at times when she complains of severe pain, but this gives little if any relief. The patient weighs approximately 90 to 95 pounds (41 to 43 Kg.). Her heart and lungs are normal. Urinalysis gives negative results. All the reflexes are normal. The Wassermann reaction is negative. Digestion seems to be normal. There is no vomiting and bowels are quite regular. I am not so much concerned with her paralysis agitans but I was hoping that you could give me some suggestion as to the cause of this pain and also some treatment to give her relief. Kindly omit name.

M.D., Michigan.

ANSWER.—The pain in paralysis agitans, with associated paresthesia and a feeling of stiffness, is due to the muscular rigidity. Although there is no specific treatment, drugs of the belladonna group often give relief. They can be used in some patients in surprisingly large doses, spread throughout the day. A patient may take by mouth with impunity as much as six or eight 1/100 grain (0.0006 Gm.) tablets of scopolamine hydrobromide in twenty-four hours—four on arising, two at noon and two early in the evening—provided careful watch is kept for untoward symptoms. Massage, the application of heat and muscle stretching also are helpful. Phenobarbital sodium in 0.015 Gm. doses, three or four times a day, ought to add to the patient's comfort.

EFFECTS OF KEROSENE FUMES

To the Editor:—Given a case in which a worker spends an hour in a tank in which there are enough kerosene fumes to make him nauseated and feel generally ill but still able to continue locomotion, could there be any permanent damage or disability to his nervous system? Please omit name.

M.D., Ohio.

ANSWER.—It is impossible at this time to provide an unequivocal answer to this query. Permanent damage following exposures similar to that mentioned in the query has been claimed. One case grew out of the use of petroleum naphtha (which chemically is closely similar to kerosene) as a paint solvent for coating the interiors of metal pontoons. The painter was acutely damaged to about the same extent as that suggested in this query. For many months afterward this workman alleged complete disability for work and furnished many vague suggestions of neurologic disease, most of which suggested malingering or at least a neurosis. Moreover, in this case some possibility exists that carbon monoxide was pumped into the pontoons along with heated air intended to accelerate paint drying. In Hayhurst's series of cases of naphtha poisoning (Poisoning by Petroleum Distillates, *Indust. Med.* **5**:53 [Feb.] 1936) the following statement is found: "Periods of exposure have ranged from five weeks to three or four years before employment disability began." However, in other portions of his discussion reference is made to two weeks' exposure followed by two months' disability. It is Hayhurst's conception that petroleum distillates produce their damage at least in part through a dissolving action on the fat of the central nervous system, the medullary sheaths of peripheral nerves, heart muscle and liver. It is noted that chronic cases invariably give the impression at first of malingering, although at a later time substantial proof may arise indicative of organic damage. The onset symptoms are chiefly subjective and are said to include headache, dizziness, loss of appetite, dyspepsia, itching, insomnia, pains in the back, legs and cardiac region, weakness, and shortness of breath. Later, according to Hayhurst, the chief manifestations are marked loss of weight, anxiety, bizarre neurasthenic and psychasthenic symptomatology, increased pulse rate, moderate secondary anemia, slight leukocytosis, skin irritation, lowered resistance to infection, diarrhea, mental depression, muscular twitching and tremors.

LOW BLOOD PRESSURE WITH SYNCOPE

To the Editor:—A man, aged 45, suddenly fainted. His systolic blood pressure one hour later was 60, but no diastolic pressure could be heard. The pulse rate was 180 per minute, the temperature was normal and no signs of cardiac decompensation were present. Twenty-four hours later his temperature was 101, pulse 200, and blood pressure 80/40. Electrocardiographic examination revealed a PR interval of 0.16, QRS interval 0.04 to 0.06, lead 1 normal, lead 2 a high T wave, lead 3 a slurring QRS, lead 4 a slurring QRS and a monophasic QRS. Twelve hours later the pulse was 80, blood pressure 88/50, and temperature normal. He states that he has always had low blood pressure. Other manifestations are severe frontal headaches, which usually occur in the morning and disappear in the afternoon, possibly an abscessed tooth, and an enlarged prostate. I feel that the low blood pressure is the cause of the fainting spells. I should appreciate any suggestions as to diagnosis or treatment. Are there any drugs, endocrine products or treatments which are of use in raising the blood pressure? Please send me a bibliography regarding causes and treatment of hypotension. Please omit name.

M.D., California.

ANSWER.—It is assumed that hemorrhage has been ruled out. Hemorrhage may be silent and accompanied by little in the way of other symptoms. Hemorrhage from a duodenal ulcer, varices in the esophagus or other sources may appear with no previous symptoms and no obvious sign of hemorrhage at the time.

Epilepsy may first appear as late as 45 or later. Fainting attacks, so called, may appear in aortic stenosis, a lesion that is not as uncommon as it is reputed to be. A paroxysmal attack of some abnormal cardiac rhythm might have been the cause, but that is improbable. A coronary thrombosis is suggested by the fall in blood pressure, the rapid pulse after the syncopal attack, and the elevation in temperature twenty-four hours later.

Persons with an abnormally low blood pressure may have syncopal attacks from anemia consequent on any factor that direct blood elsewhere, as to the splanchnic area. Some mild gastro-intestinal disturbance may be responsible for this. In some persons with lax abdominal walls, such a cerebral anemia may follow a change in position from a sitting to an upright position and may be relieved by wearing an abdominal binder. Fainting attacks occur in the so-called effort syndrome a symptom complex characterized by an overlabile autonomic system. Syncopal attacks occur also in those with a hypersensitive carotid sinus reflex.

It is impossible to give advice when so few data are available. As a rule, drugs designed to elevate blood pressure are best omitted. The first essential to treatment is diagnosis.

HYPERTENSION, NEPHRITIS AND HEADACHE COMPLICATING PREGNANCY

To the Editor:—A married woman, aged 21, whom I first saw on account of pregnancy, had a blood pressure of 125 systolic, 82 diastolic, at first. It gradually went up to 155/90 the last time she was in my office. When I saw her at the time of delivery it was 205/135. No albumin appeared in the urine at any time, and she had no headaches and no spots before her eyes. The blood pressure after delivery was 178/118 and next day was 140/100. Two days later, during a severe attack of gas, it went up to 205/125 and down again the next day as before. Since the arrival of the baby the patient has had frequent and severe headaches with little relief from acetylsalicylic acid or even from codeine. Albumin is found in the urine, with pus cells 2 plus, epithelial cells and casts. The blood pressure is usually around 150/100. I have failed miserably to better her condition with methenamine, enteric coated ammonium chloride pills or a salt free diet. She has no edema but there is a fulness together with a pasty complexion and she still feels worn out all the time. She has a younger brother who has had albumin in the urine for the last six years. I have made a diagnosis of interstitial nephritis. Could this be correct? What can I try for these headaches? What else can I use for the kidneys? Please omit name.

M.D., Nebraska.

ANSWER.—One is curious to learn whether this patient suffered from an acute nephritis in childhood, especially of the type consequent to scarlet fever. The clinical course is such that one immediately suspects a chronic, latent or "silent" nephritis existing before the pregnancy and being acutely and severely exacerbated by it. The existence of proteinuria in a younger brother tends to confirm this impression of probable infective nephritis in childhood. That hypertension did not arise earlier in the pregnancy is evidence that the functional reserve was not severely impaired.

The postpartum drop in arterial tension followed by a rise on the third or fourth day is typical. The delayed rise is frequently to levels higher than those observed just before delivery. It has been demonstrated (Stieglitz, E. J.: Hypertension in Pregnancy, *Arch. Int. Med.* **39**:465 [April] 1927) that this delayed rise in arterial tension occurs simultaneously with the onset of lactation and is associated with a corresponding reduction of the calcium content of the blood. The "attack of gas" may possibly have been coincidental.

These patients usually tend to go down hill despite the most energetic therapy, and any further gestations tremendously accelerate the degenerative changes.

The most urgent and necessary study at present is that of the blood. The statement "a pasty complexion and she still feels worn out all the time" is significant. An anemia, perhaps of severe degree, is to be expected both because of the nephritis and because of recent blood loss at the time of delivery. The correction of this anemia is the most imperative therapeutic problem. It is also in many respects the most difficult problem in the management of chronic nephritis. One must not expect rehabilitation and repair of injured tissues if they do not receive an adequate blood supply with all that this implies: ample oxygen to the tissues, ample foodstuffs and efficient removal of metabolic débris. The injury due to hypertension is caused by impaired capillary circulation because of arteriolar constriction, and such histanoxia is tremendously enhanced by simultaneous anemia. If anemia does exist, every effort should be made to build up the hemoglobin content of the blood: parenteral liver therapy, large doses of iron and, if necessary, transfusion of blood. Ferric cacodylate intravenously, in doses of 0.065 Gm. at five day intervals, has proved effective when the hematopoietic structures have not been too severely injured.

CARBARSONE IN TRICHOMONAS INFECTION

To the Editor:—Kindly advise me if there is any danger (generally and to the tissues themselves) from the use of carbarsone suppositories for the treatment of Trichomonas vaginalis vaginitis. If this medication is used, say for two or three courses (thirty-six suppositories) in one month and, in case of recurrence, a course of twelve suppositories monthly, is there not danger from arsenic poisoning? If published, please omit name.

M.D., Massachusetts.

ANSWER.—The first death following the administration of carbarsone was recently reported in THE JOURNAL (March 7, p. 769) by Ervin Epstein. The patient took the drug by mouth and in enemas. In spite of this fatal case, carbarsone is a relatively innocuous drug even though it contains 28.85 per cent of arsenic and is closely related chemically to tryparsamide and acetarsone. Epstein reviews the literature and discusses the reactions that may follow the use of carbarsone. The recommended dose in the treatment of amebiasis is 0.25 Gm. twice a day for ten days. This may be repeated after a rest period. Eli Lilly & Co. markets carbarsone in capsules of 0.25 Gm. (3¾ grains); hence if thirty-six of these capsules are used over a period of one month the dosage is within the limits of safety. However, Epstein warns that care must be taken in administering carbarsone and constant watch must be maintained for signs of intolerance.

PULMONARY EDEMA

To the Editor:—About twice a year I am called on to treat a case of acute pulmonary edema of cardiac origin. I should make a rough estimate that my mortality is almost 70 per cent. The patients are usually over 70 years of age, with or without known preceding hypertension. Will you please discuss the treatment, including: (*a*) Digitalis. (*b*) Venesection; the patients are cold and clammy, the peripheral veins collapsed. I have not seen any indication for a venesection, but some use it. (*c*) Morphine and atropine. I have used atropine up to doses of one-fiftieth grain (0.0013 Gm.) or even more. With respect to morphine in elderly people, I have hesitated. After one-eighth grain (0.008 Gm.) of morphine sulfate I have seen the respirations become quieter, but the patient became unconscious and shortly died. However, I have seen patients become unconscious without the morphine. I sometimes use dry cupping. (*d*) Oxygen; I cannot obtain it soon enough in the emergency. (*e*) With the possibility that some of these cases may be coronary thrombosis, will you please also discuss this. I am under the impression that hypertonic dextrose solutions absolutely do no harm but that aminophylline is still experimental. If published, please omit name.

M.D., Pennsylvania.

ANSWER.—The treatment will depend on the condition of which the pulmonary edema is a symptom.

Some cases will be the result of failure of the left side of the heart, consequent on various pathologic conditions but especially following hypertension. Digitalis will be of value in some of these and can be tried in moderate doses for the purpose of increasing tonus and not primarily to slow the heart rate, as the minute volume may be larger with the more rapid rate. It should be tried tentatively and the efforts watched carefully. It may be of value, it may effect no improvement, or it may be a deterrent. One of the mercurial diuretics may be used safely and may be effective. Venesection should be reserved for those cases in which there is an obvious increase in venous pressure; it may be of great value in such cases. Morphine will add to the patient's comfort. Any of the purine

base diuretics, including aminophylline, may be of value. They are not experimental and have been used clinically for more than forty years.

Some of the cases are probably cases of coronary thrombosis and should be treated as such. Absolute rest is the most essential feature of the treatment. Oxygen is of value and can be given successfully by nasal catheter when other means are not available. Treatment cannot be described in detail here.

Some of the cases may be due to the onset of an abnormal rhythm. They are best treated by rest at first and, in cases of fibrillation, by digitalis in full doses if the rhythm does not spontaneously return to normal.

REGURGITATION OF FOOD IN ADULT

To the Editor:—A woman, aged 42, unmarried, has been having regurgitation now for nearly five years without a great deal of discomfort. Occasionally part of the meal comes up without any effort or straining. There is no pain anywhere, but now and then a slight discomfort in the epigastrium, apparently without any definite connection with meal time. Apparently there is not much acidity. Physical examination is essentially negative except for a rapid pulse, 90, blood pressure 156 systolic, 80 diastolic, and signs of hypothyroidism. The blood and the urine are essentially normal. The basal metabolic rate is minus 20, for which she has been given thyroid with definite improvement in her general feeling. A gastro-intestinal series showed constant regurgitation into the esophagus. The appendix and stomach are normal but there is some generalized ptosis, and downward progress of barium sulfate is slow. Gallbladder functioning is normal except for a rather slow emptying. There is no evidence of stones or adhesions. The duodenal cap is spastic. The lower end of the stomach and the second portion of the duodenum deviate quite far to the right. No defect is seen in the duodenum or stomach. Besides thyroid, she has had acid sodium phosphate bile salts, but slight relief has been obtained only with a calcium-bismuth-magnesium mixture taken at hourly intervals. During the three months of treatment most of her improvements have been only in symptoms associated with low basal metabolism and her weight has come down from 140½ pounds (63.5 Kg.) to 132 pounds (60 Kg.). As far as the regurgitation is concerned, it stays but slightly under control when she is taking the powder every hour daily. Please make some suggestions as to the treatment. I have considered cholecystectomy but am hesitant. Please omit name.

M.D., California.

ANSWER.—The noteworthy symptom in this case is the regurgitation of food. It is necessary to consider the condition on a functional basis, since the results of examination, as given in the question, seem to exclude organic disease such as esophageal stricture, diverticulum or diaphragmatic hernia. The demonstration of an irritable duodenal bulb on roentgen examination suggests the possibility of duodenal ulcer, as does the partial relief by the use of alkali. However, if such a lesion exists, it would not result in food regurgitation or in vomiting without evidence of gastric retention during the roentgen examination. Furthermore, the absence of free acid in the regurgitated material would indicate that the food had not reached the stomach, unless free acid is absent from the gastric contents.

If cardiospasm is the cause of the symptom, it should be relieved by the administration of effective doses of atropine. The etiology of the cardiospasm should be determined if possible. An ulcer in the lower part of the esophagus must be considered.

As a further suggestion, it seems advisable to exclude the possibility of a small diaphragmatic hernia through the esophageal hiatus by careful roentgen examination with this condition in mind.

POSTMORTEM EXAMINATION OF BRAIN—NECROPSIES ON PRESIDENTS

To the Editor:—Can you tell me in what percentage of autopsies the brain is examined and also the spinal cord? Have autopsies been performed on any of the presidents of the United States and what conditions were found? Please omit name.

M.D., New York.

ANSWER.—It would not be possible to give the percentages of necropsies in which the brain and spinal cord are examined. The frequency of such examination varies greatly in different places. Generally speaking, the brain is frequently examined as part of the routine, while the spinal cord usually is examined only under special indications.

There are records in medical literature of necropsies on three presidents of the United States: Lincoln (The Medical and Surgical History of the War of the Rebellion, Washington, Government Printing Office, volume II of part I, being the first surgical volume, second issue, 1875, p. 305). Garfield (complete medical record of President Garfield's case, containing all the official bulletins, from the day of the shooting to the day of his death, together with the official necropsy, made Sept. 20, 1881, and a diagram showing the course taken by the ball, compiled from the records of the Executive Mansion, Washington, 1881), and McKinley (The Official Report on the Case of President McKinley, THE JOURNAL, Oct. 19, 1901, p. 1029). A good many articles have been written about the cases of President Garfield and President McKinley (see Index Catalogue of the Library of the Surgeon General's Office, U. S. Army, second series, Washington, Government Printing Office).

ADMINISTRATION OF ACETYLSALICYLIC ACID TO INFANTS

To the Editor:—The late W. McKim Marriott in his book on "Infant Nutrition" (appendix) gives acetylsalicylic acid in the dose of 1 grain (0.065 Gm.) every four hours for an infant 1 year old. What would be a good vehicle in which to suspend this drug for an infant from 6 months to 2 years of age? Please give several prescriptions. I have noticed that if the powder is not thoroughly moistened before it reaches the throat it causes an unpleasant coughing spell. Does aspiral contain any acetylsalicylic acid? It is a very clear solution. Is the following mixture compatible?

℞ Ammonium carbonate ..... gr. 24
Camphorated tincture of opium ..... dr. 2
Syrup of acacia ..... oz. 1
Water ..... sufficient to make oz. 3

If this query is printed, please omit name.

M.D., New York.

ANSWER.—There is no good liquid vehicle for acetylsalicylic acid because it is hydrolyzed by water with the formation chiefly of a salicylate. The addition of potassium citrate does away with the ferric chloride test for salicylates, even though the latter is present in the mixture. The following prescription will serve the purpose.

℞ Acetylsalicylic acid ..... 1.0 Gm.
Sucrose ..... 5.0 Gm.
Mix and divide into fifteen powders.

A simple way of administering such a powder to an infant is to have the mother dip a moistened finger in the powder and wipe it on the baby's tongue. This will avoid the coughing spell when the dry powder is put into the mouth so that some of the dust is inhaled.

Elixir of aspiral probably does contain some acetylsalicylic acid but no doubt a much larger proportion of salicylate.

The ammonium carbonate mixture is incompatible for several reasons, chief among which is precipitation of the opium alkaloids by the alkalinity as well as the precipitation of the camphorated tincture of opium on the addition of water.

TREATMENT OF SQUINT IN BABY

To the Editor:—A girl baby, 22 months old, has suddenly begun having an internal squint of the left eye. Her eyes were perfectly straight when she was born. This has come on without any sickness intervening and while the child is in exceedingly good health. I have been advised that it is possibly due to refractive error and am going to have an ophthalmoscopic examination done. Do you think there is any kind of exercise that might be helpful to this child, or do you think that this will disappear without treatment? At the present time we are trying atropine, one drop twice a day, to paralyze accommodation. Please do not publish my name.

M.D., Washington, D. C.

ANSWER.—In a 22 months old baby there are really only two measures that may be used in combating squint. The first is a perfect correction of whatever refractive error may be present, the refraction being performed under atropine. The second is the endeavor to develop the amblyopic eye, provided the squint is of the concomitant type. Any competent ophthalmologist can tell by careful examination whether that condition exists.

In a child of that age it is most improbable that the squint will disappear without help. The continued use of atropine for the paralysis of accommodation as a therapeutic measure has not proved particularly successful.

CATARACT IN SYPHILIS

To the Editor:—Please advise me whether antisyphilitic treatment will cure cataract when there is cataract in conjunction with the mildest possible form of latent syphilis.

CARLETON DEEDERER, M.D., Miami, Florida.

ANSWER.—No. Once a cataract has started, regardless of the cause, no known treatment can influence the presence of the opacity of the lens. Arrested progress has been claimed by many through the use of this, that or the other remedy, but the claims have not been substantiated. As far back as 1893, Hirschberg stated that, once diabetic cataract had started, it would progress regardless of a restoration of normal sugar metabolism, and this aphorism holds true for cataract due to other causes.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Endorsement.* Hartford, Nov. 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Medical.* Des Moines, Dec. 1-3. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines. *Basic Science.* Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Regular.* Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: Lincoln, Nov. 23-24. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Raleigh, Nov. 30. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, Dec. 2-4. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examination will be held simultaneously in different centers of the United States and Canada in December. *Practical* or *clinical* examination will be given in St. Louis in April. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. *All applications for this examination must be filed before Dec. 1, and case reports must be submitted before Jan. 1.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. *Only applications received by the Secretary on Dec. 1 or before will be acted upon by the Board.* Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

AMERICAN BOARD OF UROLOGY: Chicago, Dec. 4-6. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Delaware July Report

Dr. Joseph S. McDaniel, secretary, Medical Council of Delaware, reports the written examination held in Dover, July 14-16, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventeen candidates were examined, all of whom passed. Five physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Maryland School of Medicine and College of Physicians and Surgeons		(1934)	78.2
Long Island College of Medicine		(1935)	82
Hahnemann Medical College and Hospital of Philadelphia		(1934)	88.4, 89, (1935) 86.2, 87.6, 89.2, 92.1
Jefferson Medical College of Philadelphia		(1933)	81.1, (1934) 79.3, 80.5, 82.8, (1935) 79.2, 81.4, 82.5, 84.5
Temple University School of Medicine		(1934)	78.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1909)	Illinois
Harvard University Medical School		(1925)	New York
New York University, University and Bellevue Hospital Medical College		(1932)	Penna.
University of Pennsylvania School of Medicine		(1920)	Penna.
Meharry Medical College		(1932)	Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Georgetown University School of Medicine		(1935, 3)	N. B. M. Ex.

Hawaii July Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the written examination held in Honolulu, July 13-16, 1936. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934)	80
University of Michigan Medical School		(1933)	84
Creighton University School of Medicine		(1933)	79
University of Wisconsin Medical School		(1935)	86

School	FAILED	Year Grad.	Number Failed
Loyola University School of Medicine		(1936)	1
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England		(1936)*	1

* Verification of graduation in process.

Georgia June Examination

Mr. R. C. Coleman, joint-secretary, State Examining Boards, reports the written examination given by the Georgia State Board of Medical Examiners in Atlanta, June 10-11, 1936. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty-six candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine		(1932) (1936)	87.8, 83.8, 84.7, 85.3, 85.3, 85.5, 85.7, 86, 86, 86.6, 86.7, 86.9, 87, 87.4, 87.5, 87.6, 87.6, 87.6, 87.7, 88, 88.4, 88.5, 88.7, 88.8, 88.9, 88.9, 89.1, 89.4, 89.6, 89.6, 89.7, 89.8, 89.9, 90.2, 90.5, 90.7, 90.8, 90.8, 91.1, 91.3, 91.5, 91.5, 91.8, 92, 92.3, 93.8
University of Georgia School of Medicine		(1936)	86.2, 86.7, 86.9, 87.3, 87.5, 87.7, 88, 88.1, 88.3, 88.6, 88.6, 88.6, 88.7, 88.8, 88.8, 88.9, 89, 89.2, 89.3, 89.3, 89.4, 89.7, 89.7, 89.7, 90.2, 90.2, 90.2, 90.2, 90.3, 90.4, 90.5, 90.5, 90.7, 91, 91.7, 91.8
Rush Medical College		(1928)	93

University of Nebraska College of Medicine	(1934)	91.1
University of Rochester School of Medicine	(1935)	89
Meharry Medical College	(1936)	89.9

Thirteen physicians were licensed by reciprocity from February 6 through August 19. The following schools were represented:

LICENSED BY RECIPROCITY School	Year Grad.	Reciprocity with
College of Medical Evangelists	(1932)	New Mexico
University of Colorado School of Medicine	(1930)	Colorado
University of Illinois College of Medicine	(1931)	Missouri
University of Louisville Medical Department	(1910)	Tennessee
Tulane University of Louisiana School of Medicine	(1923)	Louisiana
Western Reserve University School of Medicine	(1933)	Ohio
Jefferson Medical College of Philadelphia	(1911)	Penna.
University of Pennsylvania School of Medicine	(1934)	Penna.
Medical College of the State of S. Carolina (1933),	(1934)	S. Carolina
Meharry Medical College	(1935)	Tennessee
University of Tennessee College of Medicine	(1933)	Tennessee
Medical College of Virginia	(1930)	Virginia

Book Notices

Industrial Dust: Hygienic Significance, Measurement and Control. By Philip Drinker, S.B., Ch.E., Professor of Industrial Hygiene, Harvard School of Public Health, and Theodore Hatch, B.S., S.M., Instructor in Industrial Sanitation, Harvard School of Public Health. Cloth. Price, $4. Pp. 316, with 104 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1936.

Control of the dust hazard in industry is the joint duty of the physician and the engineer. On the whole, the engineer has done a better job than the physician. Two engineers at Harvard University, long and much experienced in industrial dust problems, have produced this praiseworthy book, covering almost every aspect of the problems of industrial dust in relation to the health of workers. The greater the familiarity of the reader with industrial dusts and dust diseases, the higher will be the appreciation of this excellent publication. Much of the material of this book represents first hand investigations of its authors. This, together with the work of other engineers and physicians, is well organized from the standpoint of the engineer. The scope of the field covered is reflected in chapters on the physical properties of dusts, fumes and mists, the effects of dusts and fumes on man, physical and chemical factors in pneumoconiosis, permissible dustiness, the dust survey, dust determination, determination of particle size, chemical and mineralogical analyses, control of the dust hazard, design of local exhaust systems, air cleaning apparatus, filtration, dust respirators and air masks. If patients with dusty lung diseases are to be kept out of hospitals, it is requisite that harmful dusts be kept out of the lungs of workers. This can be accomplished only at the work point. This book points the way to a full measure of dust control in industry. Since no less than two million workers daily are exposed to dusts of various types in the industries of the United States, the control of industrial dusts may not be regarded as a minor problem. This book may be accepted as a valuable guide in the eradication of a long existing and widespread evil in the United States.

Fieber- und Infektionstherapie: Ausgewählte Beiträge, 1887-1935, mit verknüpfenden und abschliessenden Bemerkungen. Von Prof. Dr. Julius Wagner-Jauregg, gew. Vorstand der Psychiatr.-Neurol. Klinik der Universität Wien. Cloth. Pp. 299. Vienna, Leipzig & Berne: Verlag für Medizin, Weidmann & Co., 1936.

The author, now 79 years of age, well known for his successful introduction of malarial therapy for the treatment of neurosyphilis, presents the most significant of his publications on the subject of fever and infection therapy in this volume. There are eighteen selected papers (1887-1935), with an introduction and a conclusion. Each paper has a special comment attached which amplifies the information contained, adding greatly to the historical value of the book.

The first paper is a scholarly, painstaking effort to review in 200 cases the effects of infectious diseases on all the various types of psychoses. It tells of his early attempts in 1886 and 1887 to understand so-called spontaneous recovery from supposedly incurable diseases. It is noteworthy that dementia paralytica did not receive special attention, for although it had been known for more than a hundred years, its specific relation to syphilis was not conclusively demonstrated until 1913 by Hideyo Noguchi. Wagner-Jauregg believed that the cases showing the effects of infectious diseases on psychoses were experiments of nature which should be brought under experimental control, so that clinical use could be made of the results. In the subsequent comment on the paper one learns that several psychotic patients (not with dementia paralytica) had been treated with streptococcus cultures from a patient with virulent erysipelas in 1888-1889 without success and hence a report had not been made.

The second paper, "Psychiatrische Heilbestrebungen," published in 1885, reviews again the facts and theories regarding the effect of infectious diseases on psychoses without attaining a clear understanding of the problem. It is enlightening, in retrospect, to follow the groping of the pioneer, unable to define the essentials yet determined that infectious fever therapy must be of some value. The comment following the paper mentions the use of old tuberculin following 1895 with specific selection of patients with dementia paralytica, principally because they never recovered without the intervention of an infectious disease, while patients with other psychoses occasionally recovered without any treatment. In 1900 the author treated sixty-nine unselected cases of dementia paralytica with tuberculin; the results published in 1904 by Pilcz showed undoubted benefit from the treatment in that life was prolonged and periods of remission were increased. Encouraged by this, every other patient with dementia paralytica was given a course of tuberculin and the results were compared with the controls.

The third paper, published in 1909, reports the favorable results obtained in treating private patients, whose disease was usually of shorter duration and who showed less deterioration, by tuberculin injections and simultaneous use of mercury and iodine. The following paper, published in 1912, reviews the advance of this therapy and discredits the efficacy of arsphenamine in dementia paralytica, for after 1905 arsphenamine had captured the stage and superseded all other methods of treatment.

The fifth paper, published in 1913, describes the fair success achieved during two and one-half years' trial of staphylococcus vaccine, which had been started in an effort to find a more efficient bacterial agent. Other vaccines also were tried. The sixth paper, published in 1914, reports encouraging progress with the tuberculin-mercury treatment, with a conviction that still longer remissions could be obtained by other as yet untried means.

The happy accident of having at his disposal a patient suffering from tertian malaria in June 1917 gave the author the opportunity to use the plasmodium as a means of artificially inducing fever. He had seen and heard of cases that showed favorable results following malaria and now found it superior to all other methods. He states that its superiority could not have been foreseen, since remissions had been obtained by other agents. The obvious hazard of malaria was a formidable barrier toward considering it a therapeutic agent, and there seemed great danger of spreading the disease. Numerous other pertinent questions of these dramatic times are discussed at length.

The following papers, published in 1918, 1924, 1926, 1927, 1929, 1933, 1934 and 1935, discuss technical problems and advances in the use of malarial therapy, including the treatment of the lancinating pains, the gastric crises and the optic atrophy of tabes, the types of malaria, the significance of blood grouping, the dangers of malarial therapy, the maximum improvements possible, and the mode of action. A paper published in 1934, on the use of short wave high frequency current, states that malaria is superior, since he believes that malaria has special immune body stimulating functions which probably are not duplicated by heat alone.

The last paper is a companion piece to the first two in that it reviews the field and furthermore makes an appeal to large mental hospitals to be more systematic in their treatment of psychoses with artificially induced fever. The conclusion surveys the great progress made and expresses hope for a wider use of pyretotherapy, which is already seen in multiple sclerosis and gonorrhea. He points out the real need for comparative studies between series of patients treated with malaria and those treated with diathermy, inductothermy, the Kettering air-conditioned cabinet, and so on.

This collection of papers will be of great interest to the student of the history of medicine and to the rapidly increasing number of those interested in pyretotherapy. This review of

a dramatic phase in the history of medicine furnishes encouragement for further careful clinical work in other diseases, when one remembers that the author worked at this problem for thirty years before he attained a satisfactory beginning.

The Surgical Technic of Abdominal Operations. By Julius L. Spivack, M.D., Assistant Professor of Surgery, University of Illinois College of Medicine. Cloth. Price, $10. Pp. 718, with 677 illustrations. Chicago: S. B. Debour, 1936.

As the author states in the preface, the purpose of the book is not to replace apprenticeship but to render service in the study of the technic of operations on cadavers, on living animals, or by actual assistanceship. The subject is presented in a didactic manner, simple procedures being described first. A brief review of the evolution of the operations is offered in many chapters. A bibliography at the end of each chapter facilitates further studies. The text is to the point and is easily readable. The simplicity of the orderly presentation is worthy of praise. The illustrators deserve special commendation. Exceptions may be taken to certain omissions and commissions. A scientifically trained physician is or should be familiar with the metric system, and the latter should be used exclusively in the manuals. The impression may be gained that degastro-enterostomy, i. e., undoing a previously made stoma, is the only method of dealing with postoperative gastrojejunal ulcer, while in reality more complicated procedures are frequently unavoidable. For didactic purposes it might be desirable to designate the 'Billroth I, Billroth II and Polya operations as an end-to-end, side-to-side and end-to-side anastomosis. "Cholecysto-electrocoagulectomy" is not only a tongue twister but a misnomer, as it implies the removal of a coagulum: there should be a limit to attempts of describing a procedure in one word. Devoting seven pages to a description of splenopexy and only three pages to the technic of splenectomy must be considered as an incongruity. Kocher's method of repair of a hernia and the use of living sutures or fascia strips are not mentioned. On page 664 the word "adnexa" appears with the spelling "adnexae." Gynecologic operations have been treated in a cursory manner; emphasis should be laid on the knowledge of the topography of the ureters. This little adverse criticism may be justifiably offered but should not detract from the value of the book, which undoubtedly will meet a heartfelt approval by every undergraduate and postgraduate student.

La pratique du pneumothorax thérapeutique. Par F. Dumarest, P. Lefèvre, H. Mollard, P. Pavie et P. Rougy. Préface de Fernand Bezançon. Fourth edition of "La pratique du pneumothorax thérapeutique." by F. Dumarest and Ch. Murard. Paper. Price, 50 francs. Pp. 474, with 345 illustrations. Paris: Masson & Cie, 1936.

This excellent volume on pneumothorax therapy pays high tribute to Carlo Forlanini and carries a frontispiece portrait of this pioneer of pneumothorax, with an elucidating preface by Prof. Fernand Bezançon. A thirteen page historical introduction paves the way for a better understanding of the main text, which has been brought down to date by new revisions. The text is appropriately presented in fifteen chapters covering all phases to a full understanding of the mechanism, procedures and results of collapse therapy. Where required, theories are presented and appropriately dispensed. The first edition was presented in 1918, and the authors close the present edition with a part of the introduction of the first edition calling attention to the proper performance of the procedures outlined to attain success, and point to the inestimable value of the procedures for treatment if properly performed. Imprudence can only lead to danger in spite of favorable existing conditions. Radiologic control is considered indispensable. Pneumothorax is credited as a most valuable agent in phthisiotherapy. Some students of this subject might object to the overstressing of the Forlanini ideas and methods at the expense of numerous other contributors to the subject, but this can be readily overlooked as a result of the generous practical information given. In sequence, the subject matter presents the physiomechanics of the lungs and the principles of collapse therapy with the mode of action of pneumothorax and the methods of collapse. Then follow the various types and parts of the equipment, with the technic used and the accidents to be encountered, such as cardiac and nervous complications, subcutaneous emphysema, gas embolism and pleural eclampsia. Under monolateral pneumothorax is considered the primary filling with the significance of manometric readings, the intervals for filling, the quantity of gas and the period for pneumothorax. The symptoms of pneumothorax are elucidated with and without the presence of adhesions, and hernia of the mediastinum, elective pneumothorax and the immediate results such as fever and cough are described. The influence on the opposite lung and the effect on intercurrent diseases are noted. The pleural complications of pneumothorax with pathogenesis, and clinical interpretations are well presented without omitting any details to a full understanding of the prognosis and treatment, both medical and surgical. The recently developed subject of oleothorax with its technic, indications and complications form an interesting chapter. Several chapters are devoted to the anatomic pathology of the collapsed tuberculous lung and to the mode of action of pneumothorax on the tuberculous disease. The indications and contraindications of monolateral pneumothorax are considered from various angles, including the form and character of evolution of the lesions, the age and sex of the individual, the relation to spontaneous pneumothorax, empyema, pulmonary gangrene, bronchiectasis, hydatid cysts, traumatic hemothorax, pneumonia and bronchopneumonia, the general condition, the heart and circulatory system and the nervous system. In the final chapters the entire subject of pneumothorax is rounded out by consideration of simultaneous and alternating bilateral pneumothorax in its various phases, with an elucidation of pleuroscopy with the endopleural liberation of adhesions. As complementary methods to pneumothorax are given phrenicectomy, scalenotomy with intercostal paralysis, and finally the addition of thoracoplastic operations, partial or complete. The shortcomings of the volume, if there are any, are overshadowed by the practical material presented. The main drawback for the American physician is the fact that it is entirely in French, but for those who read French fluently there is no substitute for this book in the English language; and it might well merit consideration for an English translation. It is intended to cover the practice of pneumothorax as a collapse procedure which deserves the attention of physicians in general and the chest specialist in particular. The volume is paper covered and printed on a good grade of paper, and illustrations are ample but not profuse, line drawings replacing roentgenograms and probably advisedly so, since this is not a roentgenographic textbook and does not detail case reports. It is a well worth-while volume developed over two decades by a group conversant with the subject and recommended by Bezançon, professor of the tuberculosis clinic of the Laënnec Hospital, attesting its good quality. Bezançon points out that the use of pneumothorax developed as the fruit of a rational physiologic conception and not by accident. So, likewise this volume is full of rationalities.

Music in Institutions. By Willem van de Wall, Doctor of Music, Teachers College, Columbia University. Assisted by Clara Maria Liepmann, Doctor of Jurisprudence. Cloth. Price, $3. Pp. 457, with 15 illustrations. New York: Russell Sage Foundation, 1936.

The author of this opus gives this as his main theme: "This book is written to bring to the attention of public minded citizens, especially those interested in welfare institutions, ideas and suggestions about the use of music . . . as an organic detail of institutional life and treatment, and planned to meet the inmate's need for social adjustments and integration of his personality." He then proceeds to develop this theme, presenting a deal of experience, theoretical consideration and practical information in the field of music as an aid to those sick in body, mind and morals immured in institutions. Dr. van de Wall is well qualified for this work through years of toil in his chosen specialty. After reading the endeavors of the author, one gathers that the way in which music is presented in many institutions housing the ailing is haphazard and inadequate and does not reach its main purpose as outlined in the book. In fact, many effects not obtained now are possible if a more studied and systematic application of music is made to those receptive to this mode of approach. With whatever statistics are available at present, no honest observer would claim that music alone cured a patient with dementia praecox, reformed a confirmed criminal or raised the native intelligence of a moron. Shorn of all piffle, it must be admitted that there is little if any potency in the so-called music therapy as administered today. In the main, music is still purely recreational or diverting and does a great deal if it ameliorates the con-

dition of the ailing by giving pleasure or relieves the tedium of a prolonged incarceration or keeps the emotions in some sort of control. But if there is talk of bringing a psychotic patient back to reality by means of music alone there is need for closer investigation behind the smoke screen of premature enthusiasm. There are so many other activities as a part of the life of the institutional inmate that the precise value of music as an isolated therapeutic measure is difficult to estimate, especially in the case of the insane, in which it is supposed to find its greatest usefulness. Then too the temperament, culture and idiosyncrasies of patients must be carefully studied before music as a medical means can be successfully applied. If the objective is to make music a definite therapeutic asset, better methods must be invented that will judiciously correlate music with personality. It is then only that music therapy as a scientific approach can be properly evaluated. The sane and sober exposition of Dr. van de Wall is encouraging. The volume is highly recommended to progressive physicians and musicians and to recreational therapists as the best handbook on music and the dance for institutional work extant. The material is well arranged, clearly written and illustrated. There is an extensive bibliography and the volume is well indexed.

The Nature and Treatment of Asthma, Hay Fever and Migraine, with Other Clinical Studies on Pyrogenic Therapy, Oxygen Want, Examination of Chest, Chronic Bronchitis, Pneumonia, Protracted Resolution, Fibroid Pneumonia, Pulmonary Apex, Roentgen Rays, Recovery from Subacute Phthisis, Fibroid Phthisis, Phenolsulphonphthalein, Acute Nephritis, Functional Albuminuria, Renal Oedema, Etc. Original Investigations. By Alexr. Gunn Auld, M.D., Diplomate in Public Health of the University of Oxford. Cloth. Price, 12s. 6d. Pp. 257, with illustrations. London: H. K. Lewis & Co., Ltd., 1936.

The volume consists almost entirely of articles previously published by the author, dating from 1885 to 1936. It may be divided into two parts. The first half deals with the peptone treatment of asthma. Little is said about most of the other aspects of the disease. The usual rôle of allergy in the etiology of asthma and the importance of its consideration is lightly swept aside by the insistence of the author that nonspecific desensitization with peptone is the only diagnostic-therapeutic procedure required. With regard to pollen therapy in hay fever he concludes that "the peptone treatment may be given quite alone, with as good results." The second half of the book deals with such a variety of subjects as chronic bronchitis, a case of recovery from subacute phthisis, renal edema, remarks on the picric acid test and a case of hystero-epilepsy. It is difficult to imagine what purpose this volume could serve to the student, practitioner or specialist. It is pathetically incomplete and biased on the subject of allergy. The general obsoleteness of the information on the other diverse topics discussed could leave only one possible function for this volume; that is, to serve as a historical record of the life work of a practitioner, which may be an interesting memento to his admirers.

New Faces—New Futures: Rebuilding Character with Plastic Surgery. By Maxwell Maltz, M.D. Cloth. Price, $3. Pp. 315, with 74 illustrations. New York: Richard R. Smith, 1936.

The author, who has been a frequent contributor to lay publications, wields a facile pen and succeeds ably in glorifying and dramatizing plastic surgery for the nonmedical reader. The book combines historical references, quotations, anecdotes and sufficient suggestions as to technic in an impressive manner so that there is no doubt that for the uninformed it should possess a tremendous appeal. However, the chapter on drama in the operating room, though doubtless effective for the layman, is nevertheless a bit too reminiscent of movie technic to be quite consistent with professional dignity. The principal burden of the discourse is the psychologic aspect of facial blemishes or disfigurements and the astonishing changes in temperament and outlook on life that result from their correction. Numerous case histories are cited by way of illustration. The author, however, fails to mention the discomfort, pain, anxiety and occasional disappointment which frequently accompany these operations, so that one might gain the impression that they are always successful. Also he misses an opportunity to draw the distinction between true deformities and those which are purely imaginary, the latter constituting a considerable percentage of the patients who plague the plastic surgeon and go from one to another seeking the impossible. Nevertheless the author does the profession a good turn by emphasizing the difference between the reputable qualified surgeon and the quack and by suggesting that the prospective patient make inquiry of the American Medical Association or the local medical society for information on this extremely important matter. The chapter on the rehabilitation of the criminal through the correction of facial deformities such as pug nose, cauliflower ears and disfiguring scars, as suggested by Commissioner MacCormick of New York, affords food for thought even though at first blush the proposition seems fraught with danger. The craze for beauty parlor treatments, the multiplicity of skin lotions and creams and the inordinate habit of "facials" all come in for proper criticism and are sensibly debunked in a chapter on the skin and cosmetics.

Elementary General Psychology. By Samuel W. Fernberger, Professor of Psychology, University of Pennsylvania. Cloth. Price, $3. Pp. 445, with 120 illustrations. Baltimore: Williams & Wilkins Company, 1936.

This book, which is intended for the beginning student, is excellent in many respects. As the author states, it is intended to give the student a first orientation in the material of the science of psychology. As such, it fills the purpose better than most books of its kind. It is preeminently a textbook in experimental psychology, and those chapters which deal with the simpler conscious processes, that is, the special senses, are particularly good. However, in the first page of the preface the author says "Confession must be made that I am an old-fashioned psychologist" and unfortunately modern advances in the understanding of psychologic processes are almost entirely ignored in this book. Freud's concept of the "unconscious" mind is dismissed with a short reference on page 35 and seven pages near the end of the book. The writer shows an almost complete ignorance of psychoanalytic concepts and of Freud's writings. He completely confuses the work of Freud, Adler and Rank, refers to the latter two as psychoanalysts, and consistently uses the term "subconscious" rather than unconscious to explain the freudian concept of a dynamic psychology. The pages devoted to psychoanalysis as a technical procedure are ridiculous. The only reference to the "unconscious mind" is contained, peculiarly enough, in the last paragraph of the preface, in which the author says "I have no idea how much unconscious plagiarism there may be in these pages"; so that while practically denying, or at least minimizing the psychologic importance of an unconscious mind, he confesses to its existence in himself.

Berättelse från styrelsen för cancerföreningen i Stockholm över verksamhetsåret, 1935. Index of Papers Published at the Radiumhemmet 1909-1935. Report on Cases Treated at the Radiumhemmet 1921-1935. [By Elis Berven and James Heyman.] Paper. Pp. 104. Stockholm: K. L. Beckmans Boktryckeri, 1936.

The first part of this report gives an account for 1935 in Swedish of the management of the cancer society in Stockholm. Then comes a list of the papers published from Radiumhemmet since its foundation in 1909. The remaining fifty-four pages contain a statistical analysis and summary of the cases treated at Radiumhemmet from 1921 to 1935. Like the previous report, this report also is of interest to all who are concerned with the modern treatment of cancer.

Trudy pervogo ukrainskogo c'ezda nervopatologov i psikhiatrov. Otvetstvenny redaktor: L. L. Rokhlin. Otvetstvenny sekretar: O. I. Volfovskiy. Travaux de la première réunion ukrainienne des neuropathologues et alienistes. Cloth. Price, 19 rubles, 50 kopecks. Pp. 928. Kharkov: Izdanie Ukrainskoy Psikhonevrologicheskoy Akademii, 1935.

The program included the problems of organization of psychoneurologic practice, of infections of the nervous system, and of psychiatry. Each paper is accompanied by a summary in English and in French. The size of the volume and the variety of subjects preclude the possibility of a detailed review.

CORRECTION

The Extra-Ocular Muscles.—In the review of the book by Luther C. Peter with this title, the first sentence read "In 1920 there appeared in these pages a review of the first edition of Peter's Muscles, and now after sixteen years a second edition has been published." This statement was in error. The first review of the book appeared in 1927 and the lapse of time between the first and second editions was not sixteen years but nine years.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Gangrene Attributed to Tight Casts.—Lundgren sustained a fracture of the tibia and fibula of his right leg approximately at the juncture of the lower third of the leg with the middle third. Eventually gangrene developed and an amputation became necessary. Attributing the gangrene to the negligence of the defendant in applying the casts, the plaintiff sued and obtained judgment in the lower court. The defendant thereupon appealed to the Supreme Court of South Dakota.

According to the evidence the plaintiff, twelve hours after the accident, was brought to a small hospital, where a physician applied a dressing and put the leg in "some kind of a splint." He remained in this hospital for about a week and was then removed to another hospital, where the defendant assumed charge of the case. Roentgenograms disclosed that the broken bones were not in apposition and an open reduction was done. A considerable amount of gas and pus escaped and the incisions were left open and drainage tubes were inserted. A "Boehler splint" was applied and hot dressings were used on the leg from the knee down. The patient's general condition was treated for a number of days. Two weeks later another operation was performed and a "cow-bone splint" was applied. The leg was placed in a plaster cast extending from some distance above the knee down to the toes. Windows were cut in the cast to permit access to the incisions made on May 15, and to the field of drainage therefrom, and to relieve pressure around the heel. These windows were later enlarged. On June 11, a "massive hemorrhage" occurred from the wounds on the patient's leg, which the defendant attributed to a partial destruction of the posterior tibial artery due to the infection that had developed in the leg. About a month later the cast was removed. Another roentgenogram indicated a little growth of new bone above the point of fracture but no new growth below and, in fact, some deterioration of bone tissue. The leg was placed in an open wire cradle for five days and then a second plaster cast was applied. On August 24, about a month later, the second cast was removed and another roentgenogram showed further growth of new bone above the point of fracture but still further deterioration of bone structure below the fracture. On August 30 the patient dismissed the defendant and called in another physician, who found the patient's foot in a gangrenous condition. After taking measures to improve the patient's general condition, he amputated the leg midway between the hip and the knee.

The plaintiff contended that the gangrenous condition of his foot necessitating the amputation was due to impaired circulation resulting from too tight application of the casts. The defendant contended, on the other hand, that the leg was badly infected in the area of the fracture when he first saw the plaintiff and that the gangrene was due to the destruction or partial destruction of the posterior tibial artery by that infection, thereby impairing the circulation of blood to the foot. The physician who operated testified that the condition of the foot when he saw it was not the condition that he would have expected to find if the proximate cause thereof had been a breaking down of the posterior tibial artery, and that a cast unduly tight and constricting could have caused the condition. The plaintiff testified that almost immediately after the first cast was applied, symptoms of undue constriction appeared, that he complained to the defendant and to the nurse that the cast was too tight, that his toes were swollen, discolored and painful and that a sore or ulcer appeared on his heel. The condition of the foot improved after the first cast was removed, he testified, but grew worse after the second cast was applied which was even tighter than the first one. He continuously complained about the discomfort it caused.

The injury in this case, observed the Supreme Court, was to a part of the body not being treated. The treatment was for a fracture a little below the knee. Gangrenous destruction of the foot is not a normal or usual result of such a fracture. It is a result that might very well follow if the casts were permitted to be or remain so tight as unduly to restrict circulation in the foot. Certainly where, as here, the toes were at all times observable, to permit a cast to remain too tight would be either unskilful or negligent, or both. Even though the defendant exercised good judgment, said the court, with respect to how tight the casts should be when he put them on, that fact would not excuse him from carefully watching conditions thereafter and loosening the casts if there were indications either that they had been put on too tightly or that because of swelling of the leg they had subsequently become unduly constrictive. If the jury believed the plaintiff's testimony, said the Supreme Court, they would be justified in finding that the destruction of the foot resulted from the casts being too tight. If the jury accepted the testimony of the defendant and his witnesses, they would be justified in believing that the casts never were tight and that the impairment of circulation and consequent destruction of the foot resulted from the breaking down of the supplying artery due to infection. The real point at issue was one of fact rather than medical theory or expert opinion. It was for the jury to determine whether the gangrenous destruction of the foot resulted from impairment of circulation by reason of the breaking down of the artery, for which the defendant would not be liable, or whether it resulted from the defendant's lack of care or skill, or both, in incasing the injured leg in casts too tightly applied and maintained, for which the defendant would be responsible.

After reviewing the entire record, the Supreme Court did not feel it could disturb the findings of the jury. The judgment in favor of the plaintiff was accordingly affirmed.—*Lundgren v. Minty (S. D.), 266 N. W. 145.*

Workmen's Compensation Acts: Employee's Right to Procure Additional Medical Care When That Furnished by Employer Is Inadequate.—The claimant, a nurse in the Los Angeles County General Hospital, contracted poliomyelitis in the course of her employment. She was admitted to the hospital for treatment, June 5, 1934. Because of crowded conditions due to an epidemic of poliomyelitis, she was apparently unable to obtain the care which her condition required. Sometime after June 28 she developed a mental condition bordering on psychosis. At the instance of a former intern at the hospital, following a conference with the resident physician and a physician in charge of industrial accident cases for the county, she was transferred to a hospital at Mecca and later to another institution. She made steady improvement. From time to time bills for her treatment were sent to the Los Angeles County General Hospital, which the county refused to pay. On Feb. 5, 1935, the claimant was returned to the Los Angeles County General Hospital. Her condition at that time was much improved but became worse after a short stay in the General Hospital and her previous symptoms manifested themselves again. On March 11, 1935, the proper county officials ordered the claimant transferred to the Mecca hospital and authorized the payment of bills for her treatment from that date on. Subsequently, the claimant was awarded compensation by the California industrial accident commission, which award included an amount sufficient apparently to pay all bills for her treatment. Los Angeles County, her employer, then brought certiorari in the district court of appeal, second district, division 1, California, to review the award, contending that since it had not authorized the claimant's removal, in the first instance, to the Mecca hospital or to the other institution, it was not liable for the charges of the two institutions for her care and maintenance.

Section 9 (a) of the California workmen's compensation act, as amended, makes it the duty of the employer to provide—

> such medical, surgical and hospital treatment, including nursing . . . as may reasonably be required to cure and relieve from the effects of the injury, the same to be provided by the employer, and in case of his neglect or refusal seasonably to do so, the employer to be liable for the reasonable expense incurred by or on behalf of the employee in providing the same.

If, said the district court of appeal, the treatment supplied by the employer does not within a reasonable time effect a cure, and if the employee thereafter obtains different treatment from his own physician which does seasonably benefit or cure him, he has established the inadequacy of the treatment previously

tendered by the employer, and is justified in changing to his or her own physician, for whose services the employer is liable. 71 C. J. 780. There was evidence before the commission that the treatment received by the claimant at the county general hospital was not such as would seasonably or adequately cure and relieve her from the effects of poliomyelitis and that the treatment to which she resorted did benefit her. Furthermore, said the court, when the claimant became worse after her return to the Los Angeles County General Hospital, the board of supervisors of the county ordered that authority be given for her transfer back to the Mecca hospital for treatment. This action admitted the inadequacy of the treatment at the County General Hospital and conceded the beneficial results that had accrued from her prior hospitalization at the Mecca hospital. Under the circumstances, concluded the court, the claimant had a right to procure medical and hospital treatment other than that tendered by the employer, and the employer was liable for the expenses thereof. The award was therefore affirmed—*Los Angeles County v. Industrial Accident Commission (Calif.), 56 P. (2d) 577.*

Malpractice: Pulmonary Abscesses Allegedly Due to Aspiration of Tooth During Tonsillectomy.—One of the appellants, a physician, performed a tonsillectomy on a 10 year old boy at the Hazard Hospital. The next day the child was removed to his home and was thereafter placed under the care of the family physician. That evening he became ill and his condition was diagnosed as bilateral bronchial pneumonia. About four weeks later he was well enough to return to school but at the end of ten days he again became ill and had an elevated temperature. A roentgenogram taken at the hospital was interpreted by the roentgenologist as showing acute pulmonary tuberculosis. About a month later the child coughed up a tooth. The child eventually died as the result, apparently, of pulmonary abscesses, and the plaintiff, the child's administrator, sued the hospital and the operating physician, contending that the tooth had been negligently loosened during the operation. From a judgment in favor of the plaintiff, the defendants appealed to the Court of Appeals of Kentucky.

The child's parents testified that immediately after their son had come out from under the influence of the ether, about one hour after the operation, he said "Mother, the doctor pulled one of my teeth," that they examined the child's mouth and found that a tooth was missing, and that his gum was bleeding as if the tooth had been recently pulled. A nurse, however, who was the only other person in the room, denied that the child ever made such a statement or that any one had discovered a tooth missing. The physician testified positively that the tooth was not dislodged during the operation and that the mouth gag used was of the standard make and was handled in the usual and ordinary manner. His testimony was corroborated by that of the anesthetist and the surgical nurse. The medical testimony was in accord that ether pneumonia frequently follows the administration of ether anesthesia, and that mucous or other foreign materials may be breathed into the lung following a tonsil operation, which, if infected, may cause abscesses in the lung. The abscesses in the instant case, according to the medical testimony, may have been due to the presence of the tooth in the lung or may have been due to the aspiration of blood and mucus.

The record, in the opinion of the court, was devoid of any facts justifying an inference that the child's tooth was knocked out during the operation. Assuming that the tooth was actually in the child's lung and accepting the testimony of the child's parents that the tooth was found to be missing following the operation, there was no evidence that the tooth was negligently knocked out during the operation. It may have simply fallen out of its socket. The burden was on the plaintiff to prove that the injury complained of resulted proximately from want of care. Proof of a bare possibility that the injury might so have resulted will not suffice. The plaintiff further contended that the defendants could have discovered the tooth in the decedent's lung in time to have removed it and to have saved his life, but negligently failed to do so. But, said the court, all the physicians interpreted the roentgenograms as indicating a tuberculous condition. The most that could be said is that they were mistaken in their judgment, and an error of judgment does not constitute negligence.

The Court of Appeals concluded that the trial court should have instructed the jury to return a verdict for the defendants. Accordingly, the judgment for the plaintiff was reversed.—*Hazard Hospital Co. v. Combs' Adm'r (Ky.) 92 S. W. (2d) 35.*

Evidence: Conclusiveness of Medical Testimony.—The appellee's wife applied to the appellant insurance company for a life insurance policy without medical examination, stating, apparently, that she was in good health. The policy was issued June 1, 1934. The insured died July 12, 1934, as the result, apparently, of cancer of the pelvic region. The insurance company refused payment claiming the insured had misrepresented, in her application, the state of her health. The husband, and beneficiary, obtained judgment in the district court and the insurance company appealed to the court of civil appeals of Texas, Amarillo.

Three physicians, who had examined the insured after the application was signed and apparently before the policy had been issued and delivered, testified that she had cancer. One of the physicians testified that in addition to the cancer he found a fistula through which the contents of her small intestines were passing into and were being discharged through the vagina. There was, however, no medical testimony as to her condition at the time the application was signed. The insured's husband, the appellee in this case, and four lay witnesses testified that except for four or five days preceding her death the insured had not been ill, had continued to perform her usual household duties including washing, cooking and taking care of the children. The trial court did not err, said the court of civil appeals, in permitting the appellee's counsel to inform the jury that it was the judge of the weight of the testimony and the credibility of the witnesses, and that it could believe or disbelieve any witness in case the evidence was conflicting. A jury, said the court, is not bound to accept the testimony of expert witnesses as true. The opinion of an expert is entitled to only such weight as the jury may see fit to give it, and the opinions of physicians concerning the insured's health at the time the policy was issued were not conclusive. When, as here, continued the court, the verdict is based on conflicting evidence, it will not be disturbed in the absence of legal error. If the evidence is sufficient to justify the verdict, it will not be disturbed even though the reviewing court might reach a different conclusion and even though it appears to be against a preponderance of the evidence.

The judgment of the trial court for the appellee was consequently affirmed.—*Universal Life & Accident Co. v. Nanes (Texas), 92 S. W. (2d) 473.*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 104 South Michigan Blvd., Chicago, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.

Mid-Western Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.

National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.

Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 5. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.

Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5. Dr. Kelly Cox, 1719 Pacific Ave., Dallas, Secretary.

Western Surgical Association, Kansas City, Mo., Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Requests as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

59: 347-510 (Sept. 15) 1936

Studies on Sex Reversal in Amblystoma: X. Sex Reversal in Parabiotic A. Punctatum of Various Local Races. R. R. Humphrey, Buffalo.—p. 347.

Studies in Wave Mechanics of Muscular Motion: VII. Experimental Biophysical Basis of Transitional Muscle in Gizzards of Birds. E. J. Carey, Milwaukee.—p. 365.

Ossification as Additional Evidence in Differentiating Identicals and Fraternals in Multiple Births. J. W. Pryor, Lexington, Ky.—p. 409.

Musculature of Antebrachium and Manus in Platypus. A. B. Howell, Baltimore.—p. 425.

Normal and Aberrant Corpora Lutea of Rhesus Monkey. G. W. Corner, Rochester, N. Y., with collaboration of G. W. Bartelmez, Chicago, and C. G. Hartman, Washington, D. C.—p. 433.

Sexual Dimorphism of Pelvis of Mouse, Effect of Estrogenic Hormones on Pelvis and on Development of Scrotal Hernias. W. U. Gardner, New Haven, Conn.—p. 459.

Absorptive Area and Volume of Chorionic Villi in Circumvallate Placentas. Marie Dees-Mattingly, New Orleans.—p. 485.

American Journal of Clinical Pathology, Baltimore

6: 423-520 (Sept.) 1936

Circulating Blood Cells as Seen by Dark-Ground Illumination. O. C. Hansen-Pruss, Durham, N. C.—p. 423.

Study of Certain Factors Which Influence Sedimentation Rates of Erythrocytes, with Especial Emphasis on Effect of Temperature. K. T. Sasano, W. H. Ordway and E. M. Medlar, Mount McGregor, N. Y.—p. 432.

Use of Stab Culture in Growth of Certain Pathogenic Fungi. J. W. Williams, Cambridge, Mass.—p. 444.

Borderline Silicosis. H. C. Sweany, Chicago.—p. 448.

Studies of Urobilinogen: I. Improved Method for Quantitative Estimation of Urobilinogen in Urine and Feces. C. J. Watson, Minneapolis.—p. 458.

Study of Organisms and Serums from Number of Typhoid Patients and Carriers. Lois Almon and W. D. Stovall, Madison, Wis.—p. 476.

Erythrocyte Counts, Hemoglobin and Erythrocyte Volume in Normal Young Men and Women Residing in Eastern United States. W. P. Belk, Elsie Curtis and Margaret K. Wilson, Philadelphia.—p. 487.

Use of Calculation Charts for Wintrobe Hematocrit and Sedimentation Rates. F. L. Dunn and J. C. Sharpe, Omaha.—p. 497.

*Simple Slide Test for Syphilis. S. J. Lewis, Beaumont, Texas.—p. 502.

Simple Slide Test for Syphilis.—Lewis devised a modification of the precipitation reaction. He has tested 1,500 serums from prospective transfusion donors with this test when rapid results were necessary. In no instance has the test been strongly positive when the Kolmer, Kahn and Kline were negative. In treated syphilis all the standard precipitation technics and his have proved somewhat more sensitive than the Wassermann reaction. Into a small test tube, 0.1 cc. of stock antigen and 0.3 cc. of the saline diluent are measured. The tube is shaken for a moment and mixed thoroughly for a few seconds by means of a capillary pipet with a rubber bulb or a medicine dropper. The mixture is allowed to stand for five minutes and is agitated again just before using. The antigen mixture should be used within thirty minutes of its preparation. Two drops of clear serum that have been heated at 56 C. for thirty minutes are placed on a slide, and adjacent to the serum three drops of the antigen mixture. This is mixed with the broader flat end of a toothpick so that the mixture occupies the middle two thirds of the slide and is not near enough to the sides to run over. The slide is rocked from side to side for three minutes and read within five minutes by indirect light against a dark background, or by holding a daylight bulb in front of and just above it. The test should not be performed in a cold room, as this causes a tendency toward false positives. Fans and strong drafts should be avoided. Negative serums have a smooth, cloudy, opalescent appearance. Positive serums show various degrees of a brownish granular precipitate, easily seen. Very strongly positive serums will show large clumps floating in an almost clear fluid. A minute amount or degree of precipitation should be disregarded or checked by other methods.

American J. Digestive Diseases and Nutrition, Chicago

3: 457-518 (Sept.) 1936

External Trauma as Cause of Lesions of Esophagus. P. P. Vinson, Rochester, Minn.—p. 457.

*Study of Hippuric Acid Excretion as Test of Hepatic Function. K. G. Kohlstaedt and O. M. Helmer, Indianapolis.—p. 459.

*Relation of Gastric Acidity to Erythrocyte Content of Blood. F. L. Apperly and M. Katherine Cary, Richmond, Va.—p. 466.

Intestinal Rate, Normal Nutrition and Health: New Principles for Maintenance, Restoration and Control of Health. F. L. Burnett, Boston.—p. 469.

Studies on Constitution and Ulcer: III. Gastric Secretion in Healthy Members of "Ulcer Families." J. Meyer, M. Maskin and H. Necheles, with assistance of E. E. Seidman, L. Scheman, E. Rosenman and P. Levitsky, Chicago.—p. 474.

Nocturnal and Diurnal Variations in Acidity of Spontaneous Secretion of Gastric Juice. Frances A. Hellebrandt, Rubye H. Tepper, Helen Grant and Ruth Catherwood, Madison, Wis.—p. 477.

Inhibitory Effect of Corpus Luteum on Gastric Secretion. I. A. Manville and W. R. Munroe, Portland, Ore.—p. 482.

Experimental Gout in Turkeys. J. L. Bollman and C. F. Schlotthauer, Rochester, Minn.—p. 483.

Spontaneous Hyperinsulinism Due to Pancreatic Adenoma in Patient with Carcinoma of Sigmoid: Catastrophic Conjunction. C.-F. Long, L. Sheplin and D. B. Fishback, Philadelphia.—p. 488.

Enzymic Efficiency in Avitaminosis: III. Influence of Vitamin B_1 and G Deficiencies on Concentration of Blood and Tissue Enzymes. M. C. Kik, B. Sure and Kathryn Sue Buchanan, with technical assistance of J. DeWitt, Fayetteville, Ark.—p. 490.

Id.: IV. Influence of Vitamin A Deficiency on Concentration of Blood and Tissue Enzymes. B. Sure, M. C. Kik and Kathryn Sue Buchanan, with technical assistance of J. DeWitt, Fayetteville, Ark.—p. 493.

Roentgenographic Studies of Mucous Membrane of Colon: II. Colitis. F. J. Lust, New York.—p. 494.

New Sigmoid Cannula. Z. Bercovitz, New York.—p. 499.

Hippuric Acid Excretion as Test of Hepatic Function.—Kohlstaedt and Helmer used the hippuric acid test in seventy-seven cases. The results indicate that there may be a marked reduction in the detoxifying ability of the liver before any of the clinical signs of hepatic disease can be detected. The simultaneous determination of the urea clearance increases the value of the hippuric acid test. The ether extraction method with the formol titration is the most practical as well as the most accurate method of determining the hippuric acid in the urine. The combined urea clearance and hippuric acid test is a reliable and valuable adjunct in the study of hepatic disease.

Relation of Gastric Acidity to Erythrocyte Blood Count.—Apperly and Cary studied the relation of gastric acidity to the red cell content of the blood in normal persons, in hemorrhagic anemia and in polycythemia. They made experiments on anemia and polycythemia in dogs, observed the incidence of achlorhydria in anemia and polycythemia and the relation of gastric acidity to the red cell content of the blood in association with gastric abnormality. Their observations show that: 1. When, as a result of recent or chronic hemorrhage, the red cell content of the blood falls below a certain critical level, free acid disappears from the stomach. Their results in a few cases in man indicate that this level is, on the average, about one-third to two-thirds the normal. In dogs the critical level is much lower. They have no information concerning gastric acidity in anemias of other origins. 2. Above this critical level, gastric acidity rises with the erythrocyte content to a maximum when the latter somewhat exceeds that found in normal health; i. e. in man, a hematocrit volume of 46 per cent. 3. With increasing hematocrit volumes above about 50 per cent in man and the dog, acidity steadily falls again to low figures. 4. From the foregoing a rising incidence of achlorhydria should be expected with increasing anemia and increasing polycythemia. This has been shown to be a fact by several observers. 5. When severe hemorrhagic anemia is associated with peptic ulcer, pylorospasm or certain other gastric conditions, acidity values are found to be far higher than those with a corresponding degree of anemia without gastric abnormality. 6. The experiments show that in certain conditions when anemia is associated with achlorhydria, the entity anemic achlorhydria must be considered in addition to Witts's achlorhydric anemia and pernicious anemia.

American Journal of Hygiene, Baltimore

24: 227-446 (Sept.) 1936

Toxicology of Selenium: III. Determination of Selenium in Air-Gas-Dust Mixtures. H. C. Dudley, Baltimore.—p. 227.
Relation of Density of Anopheline Mosquitoes and Transmission of Malaria. M. A. Barber, J. B. Rice and A. G. Mandekos, New York. —p. 237.
Seasonal Incidence of Malaria Transmission in Macedonia. M. A. Barber, A. G. Mandekos and J. B. Rice, New York.—p. 249.
Staphylococcic Immunity. J. S. Kitching and L. N. Farrell, Toronto. —p. 268.
Studies on Bactericidal Action of Phenol and Merthiolate Used Alone and in Mixtures. Carolyn R. Falk and Sophronia P. Aplington, New York.—p. 285.
*Viability of Parasitic Protozoa After Death of Host. R. Hegner, Baltimore.—p. 309.
Studies on Schistosome Dermatitis: IV. Further Information on Distribution in Canada and the United States. W. W. Cort, Baltimore. —p. 318.
Temperature Coefficient of Production of Erythema by Ultraviolet Radiation. Janet Howell Clark, Baltimore.—p. 334.
Common Cold: Effect of Merthiolate as Therapeutic Agent. T. J. LeBlanc and M. B. Welborn, Cincinnati.—p. 343.
Helminthologic Survey of Baltimore House Rats (Rattus Norvegicus). G. W. Luttermoser, Baltimore.—p. 350.
*Occurrence of Neutralizing Antibodies for Human Influenza Virus in Serums of Persons with Various Histories of Influenza. H. W. Brown, Boston.—p. 361.
Studies on Acquired Immunity to Dog Hookworm, Ancylostoma Caninum. K. B. Kerr, Baltimore.—p. 381.
Recovery of Influenza Virus Suspended in Air and Its Destruction by Ultraviolet Radiation. W. F. Wells and H. W. Brown, Boston.—p. 407.
*Effect of Various Suspending Mediums on Pathogenic and Phagocytic Activity of Endamoeba Histolytica. W. W. Frye and H. E. Meleney, Nashville, Tenn.—p. 414.
New Selenite Enrichment Mediums for Isolation of Typhoid and Paratyphoid (Salmonella) Bacilli. E. Leifson, Baltimore.—p. 423.
Nonvenereal Transmission of Trichomonas Fetus Infection in Cattle. J. Andrews and F. W. Miller, Baltimore.—p. 433.
Attempt to Immunize New-Born Infants to Tetanus Neonatorum Through Administration of Tetanus Toxoid to Pregnant Mothers. C. N. Leach, S. H. Zia and K.-T. Lim, Peiping, China.—p. 439.

Viability of Parasitic Protozoa After Death of Host.—The results of Hegner's studies involve intestinal protozoa in rats, guinea-pigs and frogs, malaria parasites in birds and trypanosomes in rats. He found that trichomonad flagellates may remain alive and multiply when transferred to suitable mediums after being in the cecum of a dead rat at 37 C. for twenty-four hours, at room temperature for four days and at 5 C. for thirteen days. Balantidial ciliates may remain alive in the cecum of a dead guinea-pig at room temperature for four days and at 5 C. for four days. Intestinal protozoa may live for from two to twenty days or more in a dead frog. The ciliates appear to be less resistant than the flagellates. Opalina lived for at least four days, Nyctotherus for nine days, Trichomonas for seventeen days and Hexamita for twenty days. Plasmodium cathemerium remained alive and capable of infecting clean canaries after being in the blood of a dead canary at 5 C. for forty-eight hours. Trypanosoma lewisi remained alive in the body of a dead rat for three days at room temperature and for ten days at 5 C. They were capable of infecting clean rats after nine days in a dead rat at 5 C. An attempt was made to demonstrate the failure of the trypanocidal antibody to appear at the peak of the infection in the dead rats, but the conditions of the experiment rendered the data unreliable.

Antibodies for Influenza Virus.—Brown performed influenza virus (Puerto Rico 8 strain) neutralization tests using mice, with the serums of persons with various histories of attacks of influenza with the following results: 1. Neutralizing antibodies were present in the serums of 74 per cent of the adults who had influenza during the 1918 and 1919 pandemic but who have not had the disease since that time. 2. Adults who passed through the 1918 and 1919 pandemic and subsequent seventeen years without an attack of influenza possessed potent antibodies to the Puerto Rico 8 virus. 3. The incidence of antibodies to the Puerto Rico 8 strain of influenza virus of children from 3 to 12 years of age was approximately the same as their incidence in the adults tested. Such antibodies were encountered infrequently in children less than 3 years of age. 4. Neutralizing antibodies to the Puerto Rico 8 virus in the serums of persons convalescent from an illness diagnosed sporadic influenza were no more potent than the antibodies present in their serums previous to the disease. 5. Attempts to recover a filtrable virus pathogenic for ferrets from three persons diagnosed as having influenza during a small institutional epidemic all failed. Neutralization tests in mice with the serums obtained from these patients during their illness and also after their convalescence indicated that no appreciable change had occurred in their antibody content to the Puerto Rico 8 strain of influenza.

Effect of Mediums on Activity of Endamoeba Histolytica.—The present observations reported by Frye and Meleney indicate that the decrease of pathogenic activity of Endamoeba histolytica, when washed cultures are suspended in horse serum-Ringer's solution (1:6) for inoculation into kittens, is not due, as they previously stated, to the absence of bacteria in the suspending medium, but seems to be due to an inhibiting effect exerted by horse serum. This is shown by the fact that Ringer's solution alone as a suspending medium did not exert the inhibiting effect shown by horse serum-Ringer's solution. Boiled horse serum-Ringer's solution not only did not show the inhibiting effect of fresh horse serum but seemed to stimulate the amebas to somewhat greater pathogenic activity. Berkefeld filtrates of the supernatant fluid of the ameba culture, when heated to the point of coagulation of albumin (70 C. or higher) and used as suspending mediums for washed amebas, resulted in a considerable increase in the pathogenic activity of the amebas. The phagocytosis of red blood cells by washed amebas in vitro was most marked in heated filtrates, somewhat less marked in boiled horse serum-Ringer's solution, still less in horse serum-Ringer's solution, and poor in Ringer's solution alone.

American Journal of Ophthalmology, St. Louis

19: 739-840 (Sept.) 1936

Roentgen-Ray Cataract: Experimental, Clinical and Microscopic Study. P. J. Leinfelder and H. D. Kerr, Iowa City.—p. 739.
Minor Sequels of Eye Contusions. M. Davidson, New York.—p. 757.
Fluorescent Lamp for Cataract Surgery. H. R. Hildreth, St. Louis.—p. 770.
Critical Summary of Surgical Experiences in 1934. E. Hill and R. H. Courtney, Richmond, Va.—p. 773.
Meningococcic Conjunctivitis Followed by Septicemia and Beginning Meningitis: Case Report. F. M. Reese, Baltimore.—p. 780.
Staphylococcus Toxin Combined with Lens Extract as Desensitizing Agent in Individuals with Cutaneous Sensitivity to Lens Extract. E. L. Burky and H. C. Henton, Baltimore.—p. 782.
Illuminating Device to Be Used as an Attachment to Binocular Corneal Microscope for Gonioscopy and Goniophotography. R. Castroviejo, New York.—p. 786.
Paralysis of Divergence of Functional Origin: Case Report. C. P. Clark, Indianapolis.—p. 789.

American Journal of Public Health, New York

26: 865-960 (Sept.) 1936

Health Work on Sugar Plantation in Hawaii. I. V. Hiscock, New Haven, Conn.—p. 865.
Practical Methods of Testing for Mastitis. J. M. Rosell, Oka, Que.—p. 872.
Adaptation of Proposed Standard Methods Medium to General Bacteriologic Culturing: Preliminary Report. C. S. Bowers and D. Evelyn West, Hartford, Conn.—p. 880.
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*Trichomonas Vaginalis Vaginitis. E. Allen, Chicago.—p. 523.
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*Puerperal Cervix. R. L. Barrett, New York.—p. 541.
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Tuberculosis of Uterine Cervix. C. W. Lester, New York.—p. 574.

Trichomonas Vaginalis Vaginitis.—Allen believes that high dry magnification of the fresh unstained vaginal secretion under reduced illumination simplifies the diagnosis of Trichomonas vaginalis vaginitis. Later staining of the dried secretion will serve to differentiate the other common forms of vaginal infection, such as yeast and gonorrhea. The profuse bubbly discharge found in this condition is laden also with various strains of streptococci. These streptococci may invade the urinary tract, Bartholin glands and probably the deeper structures of the pelvis. In like manner the male urinary tract may become infected during coitus either with the coccoid organisms or the motile flagellates themselves, and a troublesome urethritis or prostatitis is the result. Constant reinfection of the female renders permanent cure impossible until the male focus has been treated. Permanent cure of Trichomonas vaginitis will depend on recognition of possible avenues of infection. Elevation of the general resistance of the patient is important in the therapy. Scrubbing of the vaginal walls should not be instituted until some of the acute reaction has subsided. The vaginal walls are then sprayed uniformly with the powder proposed by Gellhorn (two parts of acetarsone to seven parts each of kaolin and sodium bicarbonate). The introduction of the powder can be accomplished readily by the use of the small blower used for insect powders. The excess powder may be kept in the vagina by inserting a pledget of cotton between the blades. The external genitalia also should be dusted with the powder. This treatment should be done daily for at least six days and should be reinstituted for a few days following the next menstrual period. In the interim the patient is instructed to insert into the vagina nightly a vaginal suppository containing 1 per cent of trinitrophenol, followed in the morning by a 2 quart warm water douche to which has been added 1 teaspoonful of lactic acid. The frequency of these topical applications should be decreased as the vaginitis improves, but they should be persisted in for at least three months. If the symptoms do not disappear rapidly or at any time the patient complains of vulvar irritation, the treatment is changed. A tablet containing the same ingredients as the powder may be substituted for the suppositories. Carbarsone may be substituted for the acetarsone in either the powder or the tablets. Tampons soaked in the broth filtrate as described by Hibbert may be substituted for the insufflations of powder. A 10 per cent solution of strong protein silver introduced into the vagina with the patient in the knee-chest position will often produce gratifying results.

Puerperal Cervix.—Barrett quotes Miller and his associates to the effect that a damaged or diseased cervix is present in 80 per cent of all women who have borne children. Cervical erosions, cervicitis and endocervicitis are known to exist in about 10 per cent of nulliparous women. Evidence has accumulated showing the frequency with which these diseased and neglected cervices lead to puerperal infection in subsequent labors. A chronically diseased cervix bears a direct relationship to malignant conditions in this area. Adequate postpartum and puerperal care of the cervix properly begins at the first antepartum examination of the patient. The examination includes the usual smears for bacterial flora and, in addition, inspection to reveal lacerations, cystic changes, polyp growths, erosions, granulations and epithelial changes, such as leukoplakia. The use of the colposcope is helpful in the detection of any surface changes or irregularities. Any areas with a loss or change of normal epithelium should receive special scrutiny. Malignant conditions having been excluded and all acute infection cleared up, the chronic lesions, such as erosions, cervicitis, cystic changes and endocervicitis, should receive proper treatment. In the majority of instances these conditions may be eradicated by some form of electrosurgical diathermy, such as the Hyams conization method or simple electrocoagulation. These methods are suitable for office treatment. In the more extensive lesions of the cervix, surgical correction by Sturmdorf or Emmet trachelorrhaphy may be preferable. Electrocoagulation may be used to clear up common cervical lesions in the early months of an existing pregnancy. There is a slight danger of interrupting pregnancy, however, and the patient should be warned of this possibility. Trauma to the cervix must be avoided during labor so far as is possible. At the end of the third stage of labor, under strict surgical precautions, the cervix should be palpated and inspected. Lacerations of various types may be present from simple avulsion of the muscle fibers or nicks in the mucosa to the true unilateral, bilateral or stellate lacerations of varying depth and extent. If unrepaired, these lacerations tend to heal slowly by granulation with an increased scar formation, infection, hypertrophy and eversion of the cervical lips. If lacerations of 1 cm. or more in depth are found, these are immediately sutured. Healing is more prompt and complete if the mucosa of the cervical canal is not included in the suture. Primary repair of cervical lacerations should not be undertaken in the presence of shock or after an exhausting labor, or in cases in which infection is suspected. Postpartum hemorrhage, unless due to the cervical lacerations, usually contraindicates immediate cervical repair unless it has been quickly controlled by oxytoxics or uterine tamponade. No obstetric service is complete without a careful pelvic examination at the end of six or eight weeks. At this examination special attention should be directed to the detection of cervical damage. There is little tendency to further healing of the damaged cervix after eight weeks. Lacerations, erosions and endocervicitis are quickly and safely eradicated by electrosurgical methods in the late puerperium, preferably about eight weeks post partum. For the minor lesions the method of linear cauterization with the nasal tip cautery, as advocated by Dickinson, is satisfactory. The author's preference is electrocoagulation with the ball tip electrode or with the Cherry-Ende bipolar electrode. The Hyams conization technic is also suitable in selected cases.

Annals of Otol., Rhinol. and Laryngology, St. Louis

45: 611-912 (Sept.) 1936

Some Observations on Facial Nerve Palsy. J. A. Babbitt, Philadelphia.—p. 611.
Basaloma or So-Called Cylindroma of Air Passages. J. C. Beck and M. R. Guttman, Chicago.—p. 618.
"Aural" or "Acoustic" Method of Treatment Deafness: Further Investigation. H. C. Ballenger, Chicago.—p. 632.
Function of Stapedius Muscle. A. B. Potter, St. Louis.—p. 638.
Endoscopy for Foreign Body: Report of 178 Cases of Foreign Body in Air and Food Passages. C. L. Jackson, Philadelphia.—p. 644.
Early History of Otolaryngology in America, with Especial Reference to American Laryngological, Rhinological and Otological Society. T. J. Harris, New York.—p. 655.
*Herpes Zoster Oticus: Report of Three Cases. F. T. Hill, Waterville, Maine.—p. 666.
Suggested Operative Procedure for Relief of Stenosis in Double Abductor Paralysis: Anatomic Study. J. M. Lore, New York.—p. 679.
Nasal Mucin. Catherine C. Buhrmester, St. Louis.—p. 687.
Aural Manifestations of Lipoid Granulomatosis (Hand-Schüller-Christian's Disease). J. G. Druss, New York.—p. 693.
*Relationship of Climate to Diseases of Upper Respiratory Tract. R. R. Montgomery, Long Beach, Calif.—p. 704.
When Is Sinusitis Chronic? S. N. Parkinson, Oakland, Calif.—p. 721.
Osteomyelitis of Frontal Bone. A. C. Jones, Boise, Idaho.—p. 726.

Herpes Zoster Oticus.—Hill presents three cases of herpes zoster oticus and states that it is a relatively rare condition. While the exact etiology is still in doubt, it is generally agreed that the causative agent is a filtrable virus. Teague and Goodpasture showed experimentally that the virus can pass along the nerve from some inoculated area to the spinal cord and brain, the transmission being along the axis cylinder of either motor, sensory or sympathetic fibers. The prodromal symptoms may be confined to malaise, headache and slight fever or may be more severe with nausea, vomiting and increasing pain.

Pain is the principal symptom and usually precedes the appearance of the herpetic eruption, although Nattkemper reports a case with typical eruption and facial palsy but no pain. The eruption is vesicular and confined to definite areas, depending on the ganglion involved. Facial palsy is common in the more severe cases. It is now considered that the lesion is not a ganglionitis in any limited sense but an infectious process involving all nerve structures, ascending or descending, and extending to the cortex in some cases. Exposure to cold, excessive heat, exhaustion and shock have been mentioned as predisposing factors. Apparently it is a matter of lowered individual resistance to invasion by the virus. The prognosis is generally favorable, although auditory function may be permanently damaged or lost. Apparently the spiral ganglion is least resistant to the virus and is the slowest to recover. The treatment is symptomatic, directed largely toward efforts for the relief of pain. Any definite focal infection that might have any bearing on a case should be cleared up if possible. During the last few years a number of workers have reported successful results from the use of roentgen therapy. This was used in two of the author's cases with apparent benefit.

Climate and Upper Respiratory Tract Diseases.—Montgomery deals with the relationship of climate to diseases of the upper respiratory tract but acknowledges the importance of all other factors. The nose is a factor in maintaining the water balance of the body, and the efficiency of its ciliary and other functions definitely depends on changes in climate. The incidence of head colds, while occurring about the same time of year over the entire continent and Europe, seems to be definitely related to changes in humidity and more especially to marked changes of temperature. A study of natural history suggests that the metabolic condition of all life, both wild and civilized, is affected by climatic changes. Patients suffering from tuberculous disease of the upper respiratory tract appear to do better in certain climates. Climate is a distinct factor in the etiology of diseases of the upper respiratory tract and consequently climate must be considered a factor in its treatment.

Archives of Otolaryngology, Chicago

24: 271-412 (Sept.) 1936

Treatment of Angioma of Face. F. A. Figi, Rochester, Minn.—p. 271.
Safety Pin in Esophagus. L. H. Clerf, Philadelphia.—p. 282.
Bronchial Foreign Body with Simultaneous Unilateral Emphysema and Collapse: Report of Case. I. Kubo, Tokyo, Japan.—p. 289.
*Chronic Infections in Pharynx: Pathologic Study. H. P. Schenck, Philadelphia.—p. 299.
Clinical Significance of Compensatory Granular Pharyngitis. H. I. Lillie, Rochester, Minn.—p. 319.
Frequency and Effect on Eustachian Tube of Residual Lymphoid Tissue in Nasopharynx. D. Roy, Atlanta, Ga.—p. 325.

Chronic Infections in Pharynx.—Schenck summarizes the histologic changes observed in biopsy material from the pharynges of 108 patients with systemic manifestations of disease usually attributed to some form of focal infection. There was no specific alteration in the pharyngeal nodules in one type of disease that would differentiate them from the nodules occurring in another type of disease. Marked hyperplasia with chronic inflammatory change was the rule. Proliferation occurs early, and the increase in the number of polyblasts indicates a stimulation of or attraction for the reticulo-endothelial units. Increase of the number of polyblasts in the central portions of a follicle gives the appearance of a false germinal center. Edema occurs early, but later, when fibrosis is advanced, there is dilatation of the lymph channels due to obstruction and many of the dilated channels contain cellular elements, largely lymphocytes, but also plasma cells and large mononuclear cells. Obliteration of lymph channels seems invariably to result from sufficient proliferation of fibroblasts, but there is also proliferation of endothelial cells within the channels. The perifollicular lymph spaces were obliterated by fibrosis in the abnormal nodules. Hyperplasia of lymph nodules invariably appears to precede proliferation of fibrous tissue in chronic inflammation. The increase of young fibrous tissue elements is followed by a gradual and commensurate disappearance of lymph cells. Prior to the general dissolution of cells, the decrease in the number of lymph cells is coincident with and proportional to the increase in the number of polyblasts. Plasma cells were not numerous in abnormal pharyngeal nodules. Infiltration of the fibrous tissue about the nodules first appeared on that border of the nodule which faced the epithelium; from this zone both the nodule and the epithelium became invaded. The terminal result of chronic inflammation of the nodule appeared to be a form of hyaline degeneration. No Aschoff nodules were distinguished in the sections from patients with articular pain or choreiform manifestations. If the various systemic effects observed in this series of patients are due to specific microorganisms or to specific viruses, there is certainly no comparable specificity in the coincident alteration of the pharyngeal tissue.

Canadian Medical Association Journal, Montreal

35: 239-356 (Sept.) 1936

*Clinical Experiences with Protamine-Zinc-Insulin and Other Mixtures of Zinc and Insulin in Diabetes Mellitus. I. M. Rabinowitch, J. S. Foster, A. F. Fowler and A. C. Corcoran, Montreal.—p. 239.
Results of Sympathectomy in Children. J. L. McDonald, Toronto.—p. 252.
Rheumatic Infection in Childhood: Observations on Sedimentation Rate and Schilling Count. R. R. Struthers and H. L. Bacal, with technical assistance of Josephine Schacher and Madeline Flander, Montreal.—p. 258.
Relationship of Maternal Anemia to Fetal Polycythemia. G. J. Strean and R. Gottlieb, Montreal.—p. 261.
Surgeon's Responsibility in Treatment of Duodenal Ulcer. R. R. Graham, Toronto.—p. 263.
Migraine. D. Slight, Montreal.—p. 268.
Prognosis of Coronary Thrombosis. G. F. Strong, Vancouver, B. C.—p. 274.
Avertin Anesthesia for Crippled Children. W. Bourne, Montreal.—p. 278.
Further Report on Obstetric Analgesia and Amnesia. L. C. Conn and J. R. Vant, Edmonton, Alta.—p. 281.
*Bromide Intoxication. W. D. S. Cross, Guelph, Ont.—p. 283.
Silicosis Research. F. G. Banting, Toronto.—p. 289.
Silicosis and Its Incidence in British Columbia. C. H. Vrooman, Vancouver, B. C.—p. 293.
Value of Blood Sugar Studies in Treatment of Damage to Birth Canal: Analysis of 257 Cases. C. V. Ward, Montreal.—p. 298.
Radiologic Treatment of Cancer: Methods and Results 1928-1935: I. Biologic Conception of Dosage in Radiotherapy. G. E. Richards, Toronto.—p. 299.
Blood Lipids in Leukemia. E. M. Boyd, Kingston, Ont.—p. 305.

Clinical Experience with Protamine-Zinc-Insulin.—Rabinowitch and his associates state that blood sugar time curves obtained in diabetic patients following the administration of a mixture of protamine, insulin and zinc clearly indicated that this mixture was more effective in prolonging the hypoglycemic action of the injected insulin than protamine and insulin only. The results obtained in the human being confirm those of Scott and his co-workers in animals. A number of "insulin wasters" who had previously received treatment with regular insulin and later with protamine insulin were treated with the zinc mixture, and the results obtained show that, though the protamine insulin was more effective than the regular insulin, the control of the diabetes with the zinc mixture was almost perfect. The average insulin requirement in these cases during treatment with the protamine-zinc-insulin mixture was found to be approximately 25 per cent less than during treatment with protamine insulin. The average rate at which it was subsequently possible to reduce the insulin dosage was also found to be greater with the zinc mixture than with the protamine insulin. The addition of zinc to the protamine insulin increased the sensitivity of these patients to the injected insulin. Crystalline insulin was found to have a more prolonged action on the blood sugar than regular insulin, and in some cases its effects were equal to that of protamine insulin. The prolonged action of the crystalline insulin was evidently not due to its purity but to its zinc content. Equally good and in some instances better results were obtained by the addition of zinc to the regular commercial insulin. A number of observations suggest that under certain conditions it may not only be possible to inhibit totally the action of the injected insulin by the use of zinc but also to interfere with the action of endogenous insulin. Aside from the low toxicity of this metal, the possible accumulation of it in the body due to prolonged use of protamine-zinc-insulin is a negligible factor. However, in view of the natural occurrence of zinc in the pancreas in large quantities, it is possible that in zinc may be found the explanation of the resistance to insulin at times encountered in the diabetic state, particularly in infection. Also in zinc may be found the explanation of the transient occurrence of glycosuria occasionally present in infections in general.

Bromide Intoxication.—Cross says it is difficult to see how any epileptic patient could have escaped bromide poisoning, in some degree at least, and it is more than probable that many mental symptoms formerly ascribed to epilepsy were really manifestations of a superimposed bromide psychosis. In recent years, many preparations of the barbiturates have been introduced, which have tended to supplant bromides. In spite of this, bromides still have their place, particularly in conditions of nervous tension and anxiety. Their action is quite efficient and they have the added advantage of being inexpensive. Until quite recently little thought was given to the possibility that bromides might do harm to some patients. It was known for years that they produced a skin eruption at times, but this was usually looked on as an annoying and relatively harmless result. Most physicians seem quite surprised to learn that bromides can produce mental symptoms if improperly used. Ordinarily the toxic level is considered to be reached when the blood serum contains 150 mg. per hundred cubic centimeters. Symptoms may appear at lower levels, however, and occasionally are absent at higher concentrations. Bromide is easily demonstrated in the urine. Since the symptoms are predominantly mental, it is usually in psychiatric institutions that the greater number of these cases are detected. Bromide intoxications should be suspected in all toxic psychoses, especially when the onset of confusion and hallucinations has been sudden. It is unwise to wait for a bromide rash, as this is often absent. When administering bromides, it should always be ascertained whether the patient is taking any other form of medicine, the patient's habits regarding the taking of table salt and whether or not the fluid intake is ample. Bromide therapy should be discontinued at intervals, possibly one week out of four. The treatment consists of administering sodium chloride, which drives the bromide out of the tissues and replaces it, thus reversing the reaction occurring during its accumulation in the body. The author's practice has been to limit the use of intravenous saline solution to those who are severely dehydrated and to give the sodium chloride by mouth in all other cases in doses of 30 grains (2 Gm.) three or four times a day. The salt can also be given by rectum, but this is often difficult in a badly excited patient. It is very important to give fluids freely, and the diet should be liquid and of high caloric value.

Journal of Biological Chemistry, Baltimore

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Urate Distribution in Blood. J. H. Talbott and Jane M. Sherman, Boston.—p. 361.

Relation of Serum Phosphates to Parathyroid Tetany. J. H. Jones, Philadelphia.—p. 371.

Fractionation of Cholesterol in Blood by Precipitation as Pyridine Cholesteryl Sulfate and Cholesterol Digitonide. I. J. Drekter, A. E. Sobel and S. Natelson, Brooklyn.—p. 391.

Distribution of Iron in Certain Tissues of Normal and Anemic Albino Rats. G. Wakeham and H. F. Halenz, Boulder, Colo.—p. 429.

Isolation of Principal Estrogenic Substance of Liquor Folliculi. D. W. MacCorquodale, S. A. Thayer and E. A. Doisy, St. Louis.—p. 435.

Further Studies on Availabilty of Copper from Various Sources as Supplement to Iron in Hemoglobin Formation. M. O. Schultze, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 453.

Comparison of Calorigenic Potencies of *l*-Thyroxine, *dl*-Thyroxine and Thyroid Gland: Note on Thyroxine Content of Acid-Soluble Fraction of Peptic Digest of Thyroid Protein. G. L. Foster, W. W. Palmer and Jessica P. Leland, New York.—p. 467.

Ultraviolet Absorption Spectrum Curve of Phthiocol: Pigment of Human Tubercle Bacillus. M. O'L. Crowe, Albany, N. Y.—p. 479.

Effect of Altitude on Affinity of Hemoglobin for Oxygen. F. G. Hall, Durham, N. C.—p. 485.

Liver Proteins: I. Question of Protein Storage. J. M. Luck, Stanford University, Calif.—p. 491.

Colorimetric Determination of Acetone by Salicylaldehyde Method. A. Ravin, Denver.—p. 511.

Validity of Determinations of Hydrogen Ion Concentration of Whole Blood at Thirty-Eight Degrees with Glass Electrode. J. Sendroy Jr., T. Shedlovsky and D. Belcher, New York.—p. 529.

Utilization of Glutathione in Connection with Cystine Deficient Diet. Helen M. Dyer and V. du Vigneaud, Washington, D. C.—p. 543.

Studies in Histochemistry: IX. Quantitative Distribution of Vitamin C in Adrenal Gland at Various Stages of Development. D. Glick and G. R. Biskind, San Francisco.—p. 551.

Multiple Nature of Third Factor of Vitamin B Complex. S. Lepkovsky, T. H. Jukes and Myrtise E. Krause, Berkeley and Davis, Calif.—p. 557.

Studies of Phosphorus of Blood: V. Comparative Study of Acid and Enzymatic Hydrolysis of Acid-Soluble Organic Phosphorus, with Particular Reference to Phosphoglycerate Fraction. Edna Warweg and Genevieve Stearns, Iowa City.—p. 567.

Journal of Clinical Investigation, New York

15: 475-590 (Sept.) 1936

Acid-Base Equivalence of Blood in Diseases Associated with Hyperglobulinemia, with Especial Reference to Lymphogranuloma Inguinale and Multiple Myeloma. A. B. Gutman, Ethel Benedict Gutman, Ruth Jillson and R. D. Williams, New York.—p. 475.

Placental Interchange: I. Concentration of Certain Nitrogenous Substances in Blood, Before and After Passing Through Placenta. W. T. Pommerenke, Rochester, N. Y.—p. 485.

Ferrocyanide Clearance in Man. B. F. Miller, New York, and A. Winkler, New Haven, Conn.—p. 489.

Pneumococcic Infections in Families. R. C. Tilghman and M. Finland, Boston.—p. 493.

Bacteriologic and Immunologic Studies in Families with Pneumococcic Infections: Development of Type-Specific Antibodies in Healthy Contact Carriers. M. Finland and R. C. Tilghman, Boston.—p. 501.

Experimental Induction of Erythema Nodosum. A. F. Coburn and Lucile V. Moore, New York.—p. 509.

Variations in Serum Calcium and Phosphorus During Pregnancy: III. Effect on Fetal Circulation. J. W. Mull, Cleveland.—p. 513.

Id.: IV. Effect on Body Stores as Shown by Ash of Rats. J. W. Mull, Cleveland.—p. 515.

Sugars and Glycolytic Enzymes of Spinal Fluid in Epidemic Cerebrospinal Meningitis. R. S. Hubbard, N. G. Russell Jr. and Nellie M. Russell, Buffalo.—p. 519.

Encephalitis in North China: Results Obtained with Neutralization Tests. Ann G. Kuttner and T'ung Ts'un, Peiping, China.—p. 525.

Hemophilia: I. Abnormal Coagulation of Blood and Its Relation to Blood Platelets. A. J. Patek Jr. and R. P. Stetson, Boston.—p. 531.

Experimental Hypertension: Observations on Sustained Elevation of Systolic and Diastolic Blood Pressure in Dogs. J. E. Wood Jr. and J. R. Cash, University, Va.—p. 543.

Reticulocytosis in Guinea-Pig Following Injections of Gastric Juice and Congo Red. C. Mermod, San Francisco.—p. 559.

Comparison of Urea with Urea + Ammonia Clearances in Acidotic Dogs. R. F. Pitts, New York.—p. 571.

*Response to Insulin as an Index to Dietary Management of Diabetes. C. M. MacBryde, St. Louis.—p. 577.

Response to Insulin as Index to Dietary Management of Diabetes.—MacBryde made a study to determine whether diabetic patients who gain tolerance on high carbohydrate can be clinically distinguished from those who do not. The object was to find, if possible, a method for deciding on the optimal type of diet for each individual diabetic patient. Studies were planned to determine whether the two groups differed in their response to high carbohydrate diets. Observations have been made on the response of these patients to high and low carbohydrate diets, and the influence of these diets on the concentration of blood sugar, the glycosuria, the ketonuria, the insulin requirement, the dextrose tolerance and relative insulin sensitivity. The sensitive group of eight patients exhibited a marked fall in the blood sugar, ranging from 61 to 75 per cent of the fasting levels. All reached a blood sugar level of 68 or less, the average of the lowest determinations being 52 mg. per hundred cubic centimeters. Definite signs of hypoglycemia were observed in every patient of this group, and two experienced quite severe reactions. The relatively resistant patients showed much less response. The fall ranged from 32 to 53 per cent; none reached a point below 71 mg. per hundred cubic centimeters, and the average of the lowest determinations was 90 mg. Signs of hypoglycemia were minimal or absent. Intravenous insulin tolerance tests on three of the patients in each group indicated that possible differences in absorption of the subcutaneous insulin could not explain the observed differences in response. In each instance a patient sensitive to subcutaneous insulin was found also to be sensitive to intravenous insulin. Those relatively resistant showed relatively poor response to both the subcutaneous and the intravenous injections. The tolerated overdose in those patients found to be sensitive in the insulin tolerance tests was in every case practically zero. An increase of as much as 3 or 5 units produced hypoglycemia, while a reduction of 3 or 5 units below the required amount led promptly to glycosuria and hyperglycemia. In the resistant group, however, increase in the insulin dosage had a relatively slight effect. The dextrose equivalents, representing the number of grams of dextrose metabolized per unit of insulin, was found to be higher in the insulin-sensitive group. On the average, there appears to be approximately four times as much effect per unit in the sensitive group as in the resistant group. Those patients showing relative resistance are usually older, frequently are obese and often have vascular hypertension. There is little tendency to acidosis, while the sensitive group develop acidosis and coma much more easily. The sensitive group are usually younger, are often thin and have as a rule low blood pressures.

It is doubtful, however, whether clinical features alone will serve to distinguish the two types. They cannot be distinguished as to severity, since the insulin requirement is on the average higher in the resistant group; but acidosis occurs more frequently in the sensitive type. The relatively resistant group without exception gained tolerance on a high carbohydrate intake. In several instances this was shown to be accompanied by increased sensitivity to insulin. The insulin-sensitive patients resemble in many respects the partially pancreatectomized animal. They respond well to exogenous insulin but seem to produce too little of the endogenous hormone. When subjected to the excessive burden of a high carbohydrate intake they may lose tolerance, perhaps as the result of overburdening the damaged or numerically decreased pancreatic islets. Relatively resistant patients, however, react as if the endogenous insulin supply were adequate in amount but operating under the handicap of inhibiting factors.

Journal Industrial Hygiene and Toxicology, Baltimore

18: 371-470 (Sept.) 1936

*Poisoning by Vapors of Beryllium Oxyfluoride. I. Gelman, Moscow, U. S. S. R.—p. 371.
Clinical Studies on Lead Absorption in Human: III. Blood Pressure Observations. E. L. Belknap, Milwaukee.—p. 380.
Lead Burning: Report on "Exhausted Blow Pipe." R. E. Lane, Manchester, England.—p. 391.
Effects of Social Environment. L. J. Henderson and E. Mayo, Boston.—p. 401.
Industrial Fatigue. D. B. Dill, A. V. Bock, H. T. Edwards and P. H. Kennedy, Boston and Youngstown, Ohio.—p. 417.
Etiologic Studies on Formation of Skin Blisters in Viscose Workers. W. C. Hueper, Wilmington, Del.—p. 432.
Toxicity of Dioxan. H. H. Schrenk and W. P. Yant, Pittsburgh.—p. 448.
Carbon Monoxide Poisoning from Compressed Air. N. R. Bernz and P. Drinker, Boston.—p. 461.
*Contact Dermatitis Caused by Jonquil (Narcissus Jonquilla). G. V. Stryker, St. Louis.—p. 462.

Poisoning by Vapors of Beryllium Oxyfluoride.—Gelman states that the first phase of the clinical course of this industrial poisoning consists of a feverish state following the work in the foundry, which is like metal-fume fever. The second phase usually develops gradually two, three, four or more days afterward and can be characterized as an extensive bronchiolo-alveolitis, with a tendency to relapses and exacerbations. Its symptoms are severe dyspnea, cyanosis, paroxysmal coughing and high temperature. Pneumonic complications are rare. Edema of the lungs has not been observed.

Contact Dermatitis Caused by Jonquil (Narcissus Jonquilla).—The narcissus, which belongs to the natural order Amaryllidaceae, has more than 100 subvarieties. Among these the most widely grown are the daffodil (Narcissus pseudonarcissus) and the jonquil (Narcissus jonquilla). An operator of a large greenhouse in St. Louis County consulted Stryker because of a severe eruption of his hands. An acute, vesicular dermatitis appeared on the sides and backs of both hands in February 1935 and continued until April 1935. His hands were well until October of the same year, when a second and more severe attack occurred. At the time of examination, December 1935, the backs of the hands were covered with an acute, scaly, red, vesicular dermatitis. The patient volunteered the information that, though he was sensitive to chrysanthemum, he felt that his condition was due to jonquils, as he was working with them when the attacks occurred. Patch tests were done with all substances with which the patient was known to come in contact. Chrysanthemum produced an erythema, jonquil sap an erythema and vesiculation, jonquil stalk an erythema and vesiculation, and jonquil petal an erythema. All other substances tested gave a negative result. Improvement and complete cure followed the removal of the contact. A recurrence was experienced following a short exposure while visiting a greenhouse in another city. Following this experience the patient has remained well and he continues to avoid contact with the narcissus. Investigation of the greenhouse in question revealed that out of a total of fifty employees about 20 per cent were known to be affected by handling narcissus. Examination of five volunteers showed that they had a dermatitis of the hands and arms. The eruption varied from a few small patches to an involvement of the exposed parts. The time of employment was four, seven, twelve, fifteen and twenty years, respectively.

Journal of Lab. and Clinical Medicine, St. Louis

21: 1217-1330 (Sept.) 1936

Pathogenesis of Tuberculous Leptomeningitis. A. B. Ragins, Chicago.—p. 1217.
*Blood Sedimentation Rates in Middle-Aged and Old People. I. Miller, Staten Island, N. Y.—p. 1227.
Frequency and Significance of Changes of Expiratory Chest Volume During Routine Measurement of Basal Oxygen Consumption. J. A. Greene, with technical assistance of Muriel Ward, Iowa City.—p. 1231.
Action of Magnesium in Guanidine Intoxication. J. M. Saunders, Nashville, Tenn.—p. 1236.
Pain and Weather. W. P. Elhardt, Urbana, Ill.—p. 1247.
Gastro-Intestinal Manifestations of Hyperthyroidism: Analysis of Eighty Cases of Hyperthyroidism with Report of Four Cases Masked by Digestive Symptoms. M. Scarf, Philadelphia.—p. 1253.
Red Blood Cell Sedimentation Rate in Chronic Sinusitis, Chronic Tonsillitis and Dental Periapical Infections. R. M. Lintz, New York.—p. 1259.
Subacute Bacterial Endocarditis Produced in Rabbits with Streptococci That Resemble Diphtheroids. H. Welch, T. P. Murdock and J. A. Ferguson, Meriden, Conn.—p. 1264.
Leukopenic Index in Vasomotor Rhinitis. M. Zeller, Chicago.—p. 1274.
Leukopenic Index as Diagnostic Method in Study of Food Allergy, with Discussion of Its Reliability. W. T. Vaughan, Richmond, Va.—p. 1278.
Laboratory Diagnosis of Blastomycosis. D. S. Martin and D. T. Smith, Durham, N. C.—p. 1289.
Schilling's Hemogram. E. M. Schleicher, Detroit.—p. 1296.
Mouse Box for Operating on Tail. A. J. Gelarie, New York.—p. 1302.
Use of Polar Diagram in Charting Incidence of Disease. J. W. Williams, Cambridge, Mass.—p. 1303.
Employment of Oxalated Plasma in Bromsulfalein Dye Retention Test. C. A. Dragstedt and M. A. Mills, Chicago.—p. 1306.
Improved System of Filing Surgical Reports and Slides. W. L. Robinson, Toronto.—p. 1308.
Use of Liquid Air in Cooling Knives and Gelatin for Mounting in Frozen Section Technic. S. C. Werch, Eloise, Mich.—p. 1309.

Blood Sedimentation Rates in Old Persons.—To ascertain whether the sedimentation rate would be a simple method of diagnostic value in the examination of the aged, Miller made 621 sedimentation rates on 496 apparently normal old men during the routine admission examinations to the New York City Farm Colony. The study concerns itself with men more than 50 years of age. Degenerative diseases are in the ascendency in this group, and the sedimentation rate is not affected by degenerative changes, as 66 per cent of the patients had rates under 10 per cent, and 86 per cent had rates under 20 per cent. Age has little effect on the sedimentation rate. The slight variations present are due to the different number of cases in the various age groups. The daily wear and tear of body tissue cause only slight changes in the rate, and it remains within normal limits. Tissue destruction, whether inflammatory or neoplastic in origin, causes an increase in the sedimentation rate. The test is not diagnostic of any disease, but an increased rate in an apparently normal person should be viewed with suspicion and call for further investigation. Malignant manifestations, when localized, do not cause an increased sedimentation rate; only when necrosis, secondary infection and metastases occur are the rates increased. A single normal sedimentation rate does not rule out a malignant condition. Of twenty-nine cases of diabetes, 52 per cent showed an increase in the sedimentation rate. The author's tuberculous patients are mainly old fibrotic cases with negative sputums, and their sedimentation rates vary from normal to very high. One patient with a rate of 28 per cent advanced within six months to 45 per cent, at which time the sputum was Gaffky VI and a roentgenogram showed an advancement of the lesion. The patients with syphilis, like those with tuberculosis, had rates varying from normal to very high. The tabetic patients had normal rates, while those with central nervous system and cardiovascular involvement had increased rates.

Journal of Nervous and Mental Disease, New York

84: 249-372 (Sept.) 1936

Psychogenic Aspects of Skin Diseases. J. V. Klauder, Philadelphia.—p. 249.
Oxycephalus: Premature Synostosis of Cranial Sutures: Prevention of Blindness by Craniectomy and Decompression: Two Case Reports. A. E. Bennett, J. J. Keegan and H. B. Hunt, Omaha.—p. 274.
Sciatic Causalgia Due to Nerve Trunk Ischemia. L. J. Karnosh, Cleveland.—p. 283.
Behaviorism and the New Logic. P. L. Harriman.—p. 290.
Relationship of Intellect to Speech Defect in Aphasic Patients. F. Kennedy and A. Wolf, New York.—p. 293.
Increased Cerebrospinal Fluid Protein in Brain Tumors: Preliminary Report. J. S. Deane, New York.—p. 312.

Journal of Pharmacology & Exper. Therap., Baltimore

58: 1-118 (Sept.) 1936

Modified Pigeon Method for Bio-Assay of Antipernicious Anemia Liver Extracts. G. E. Wakerlin, H. D. Bruner and J. M. Kinsman, Louisville, Ky.—p. 1.
Absorption of Ferrous and Ferric Compounds from Intestines of Rabbits. O. Fürth and R. Scholl, Vienna, Austria.—p. 14.
Effect of Sympathectomy on Sensitivity to Adrenalin of Bronchioles. Co-Tui, C. L. Burstein and A. M. Wright, New York.—p. 33.
Studies on Persistence of Action of Digitalis and Digitalis Bodies. H. B. Haag, Richmond, Va.—p. 42.
Comparison of Pressor Effects of Some New Alkyl Derivatives of β-Phenylethylamine. W. E. Hambourger and R. B. Jamieson Jr., New Haven, Conn.—p. 53.
Local Anesthetic Activity of Quinoline Compounds. H. K. Sinha, Edinburgh, Scotland.—p. 62.
Effect of Oxygen Inhalation on Course of Acute Alcoholic Intoxication. T. C. Butler, Nashville, Tenn.—p. 68.
Relative Anesthetic Activity of Butanes and Pentanes. R. W. Stoughton and P. D. Lamson, Nashville, Tenn.—p. 74.
Studies on Insulin with Protamine. D. A. Scott and A. M. Fisher, Toronto.—p. 78.
Effect of Various Substances on Action of Insulin. A. M. Fisher and D. A. Scott, Toronto.—p. 93.
Studies on Synergism and Antagonism of Drugs: II. Action of Physostigmine on Autonomic Ganglions. T. Koppanyi, J. M. Dille and C. R. Linegar, Washington, D. C.—p. 105.
Influence of Anesthetic on Results of Digitalis Assay by Cat Method of Hatcher and Brody. C. C. Haskell, Brooklyn.—p. 111.

Journal of Urology, Baltimore

36: 189-304 (Sept.) 1936

Founding of American Urological Association with Tribute to Its Founder: Dr. Ramon Guitéras. C. L. Begg, New York.—p. 189.
Acute Suppurative Thrombophlebitis of Renal Vein. A. Hyman, New York.—p. 196.
Variations in Number and Arrangement of Renal Vessels: Study of Blood Supply of 400 Kidneys. B. J. Anson, G. A. Richardson and W. L. Minear, Chicago.—p. 211.
Compression of Upper Ureter by Sarcomatous Retroperitoneal Lymph Gland: Report of Case. P. Katzen, New York.—p. 220.
Postcaval Ureter: Two Cases. V. J. Derbes and W. A. Dial, New Orleans.—p. 226.
Vaginal Ureterolithotomy: Case Report. A. E. Hiebert, Topeka, Kan.—p. 234.
*Cysts of Prostate Gland. J. L. Emmett and W. F. Braasch, Rochester, Minn.—p. 236.
Impotence. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 250.
Effects of Some Nervous System Lesions on Genito-Urinary Mechanisms. F. Kennedy and S. B. Wortis, New York.—p. 255.
Surgery of Autonomic System of Urinary Tract. F. C. Grant, Philadelphia.—p. 261.
Gonadotropic Factor as an Aid to Surgery in Treatment of Undescended Testicle. C. L. Deming, New Haven, Conn.—p. 274.
Use of Beta-Hydroxybutyric Acid and Certain of Its Salts as an Adjunct in Treatment of Infections of Urinary Tract. E. N. Cook, Rochester, Minn.—p. 289.
Deep Tissue Suturing Needle. P. J. Riaboff, New York.—p. 298.
Improved Urethral Filiform Guide. F. C. Hendrickson, Canton, Ohio.—p. 300.
Demonstration of Multicolored Corrosion Specimens. J. Narat, Chicago.—p. 301.

Cysts of Prostate Gland.—Emmett and Braasch divide cysts of the prostate gland into congenital and acquired. Cysts of any significance are the congenital cysts, retention cysts and cysts that occur in connection with carcinoma of the prostate gland. Congenital cysts are rather uncommon, and one often is at a loss to explain the mechanism of their formation. The simple retention cyst may arise in any portion of the prostate gland and is nothing more than a normal prostatic acinus lined with simple columnar epithelium, the outlet of which for some reason has become occluded, forcing the acinus to expand. Because of the dilatation, the epithelium becomes thinned, so that the microscopic examination reveals that the inner wall is lined with flattened columnar epithelium. If the cyst is situated near the surface of the prostate gland and projects into the urethral lumen or bladder, the outside of the cyst will be covered with the corresponding mucous membrane of the urethra or bladder. One side of the cyst is practically always well embedded in prostatic tissue. This is not the only mechanism in the production of a cyst. The authors have seen many sections in which the walls of neighboring dilated acini were breaking and rupturing into one another and producing one large dilated acinus or small cyst. It is difficult to distinguish a large dilated prostatic acinus from a small cyst. Because of the frequent occurrence of these smaller prostatic cysts, the authors have chosen to report only the fourteen cases in which the cyst measured 0.75 cm. or more in diameter. Seven of these cysts were found accidentally at necropsy. Six of these had produced no symptoms, while one was associated with a marked hypertrophy of the median lobe of the prostate gland, which was producing symptoms of urinary obstruction. Three of the cysts were found in prostate glands that were removed suprapubically because of prostatic hypertrophy and urinary obstruction, while the remaining four cysts were diagnosed clinically. Thirteen of these fourteen cysts were of the simple retention type, while one was thought to be a congenital cyst, probably produced by nonobliteration of the mullerian ducts or wolffian bodies. The symptoms produced by a cyst of the prostate are purely expressions of the mechanical difficulties involved. With the modern cystoscopic equipment the diagnosis of a prostatic cyst that projects into the prostatic urethra or bladder is not difficult. Most of the prostatic cysts that have been discovered in the course of cystoscopy can be treated by fulguration or transurethral resection. The smaller retention cysts that are palpated in the course of rectal examination and that do not produce any symptoms are probably best left alone. Aspiration has been advocated, but the usual result is simply a refilling of the cyst. Large cysts in inaccessible situations may necessitate a suprapubic or perineal operation. There is no doubt that retention cysts of the prostate sometimes do rupture and disappear spontaneously.

Military Surgeon, Washington, D. C.

79: 169-250 (Sept.) 1936

Specialism and Postgraduate Training in the Medical Department of the Navy. P. S. Rossiter.—p. 169.
Immunologic Consideration of Virus Problem. H. Zinsser.—p. 171.
Marine Hospitals and Beneficiaries of the Public Health Service. S. L. Christian.—p. 182.
Admission to the Medical Department of the Army Half a Century Ago: Experience of Brigadier General William Hemple Arthur. E. E. Hume.—p. 197.
New Pack Saddle Litter (for the Panama Jungles). T. E. Scott.—p. 203.
Experiences of Army Medical Officer During the San Francisco Earthquake. H. H. Rutherford.—p. 207.
Diet Insurance. W. H. Eddy.—p. 215.
New Surgical Technic: Combined Appendectomy-Herniotomy Incision. G. C. Kirk.—p. 219.
Suggested Plan of Filing Case for Records in CCC Camps. J. H. Whiteley and F. Johnson.—p. 221.

New England Journal of Medicine, Boston

215: 421-478 (Sept. 3) 1936

Use and Abuse of Blood Transfusions. A. V. Bock, Cambridge, Mass.—p. 421.
Some New and Unfamiliar Industrial Poisons. Alice Hamilton, Hadlyme, Conn.—p. 425.
Newer Concepts of Liver Disease. C. M. Jones, Boston.—p. 432.
Sodium Chloride Therapy. A. S. Johnson, Springfield, Mass.—p. 438.
A General Practitioner's Views on Treatment of Angina Pectoris. J. Sproull, Haverhill, Mass.—p. 443.
Progress in Surgery of Autonomic Nervous System in 1935. J. C. White, Boston.—p. 453.

215: 479-516 (Sept. 10) 1936

Pathogenesis of Circulatory Failure. T. R. Harrison, Nashville, Tenn.—p. 479.
Limitations of Roentgen Method of Diagnosis. H. W. Van Allen, Springfield, Mass.—p. 482.
Vascular Nevi and Their Treatment. J. H. Blaisdell, Boston.—p. 485.
*Arachnidism. A. S. Hargis, Swainsboro, Ga.—p. 489.
Oliver Wendell Holmes: Anatomist, Autocrat, Poet. R. M. Green, Boston.—p. 493.
Acute Traumatic Pectus Excavatum. W. R. MacAusland, Boston, and M. A. Tighe, Lowell, Mass.—p. 496.

Arachnidism.—Hargis has devised a routine treatment for spider bite cases. One-fourth grain (0.016 Gm.) of morphine sulfate is given, repeated, if necessary. Calcium gluconate, 10 cc. of a 10 per cent solution, is given intramuscularly and frequently repeated if necessary. Dextrose, 50 cc. of a 50 per cent solution, is given intravenously and also repeated if necessary. The patient is immersed in a hot tub for an hour or more, once or more often if necessary. Then he is put to bed, covered well and kept warm, preferably with a radiant light. Fluids are forced and constipation and urinary retention are avoided. Of the forty-three cases of arachnidism that have been admitted to the hospital in the last fifteen years there have been no fatalities.

New Orleans Medical and Surgical Journal

89: 157-210 (Oct.) 1936

Acute Appendicitis: Acute Appendicitis in Children. J. Signorelli, New Orleans.—p. 157.
Id.: Medical Aspects of Appendicitis. O. W. Bethea, New Orleans.—p. 162.
Id.: Appendicitis as Community Health Problem. C. C. Dauer, New Orleans.—p. 164.
Id.: Part Played by the Surgeon in Lowering Mortality of Acute Appendicitis. A. H. Storck, New Orleans.—p. 165.
Id.: Presentation of Acute Appendicitis in Standard Text-Books and Systems. F. F. Boyce and Elizabeth M. McFetridge, New Orleans.—p. 167.
Lobar Pneumonia. M. Smith, Jennings, La.—p. 174.
Mycotic Infections of Lungs. D. M. Moore, Monroe, La.—p. 180.
Jaundice. F. Hagaman, Jackson, Miss.—p. 183.
Induced or Artificial Fever. H. R. Unsworth, New Orleans.—p. 189.
Physical Therapy in Chronic Rheumatic Diseases. J. S. Coulter, Chicago.—p. 192.

New York State Journal of Medicine, New York

36: 1277-1362 (Sept. 15) 1936

Rôle of Thymus and Pineal Glands in Growth and Development. L. G. Rowntree, J. H. Clark, A. Steinberg, N. H. Einhorn, Philadelphia, and A. M. Hanson, Faribault, Minn.—p. 1277.
Surgery in Essential Hypertension. F. S. Wetherell, Syracuse.—p. 1284.
*Artificial Fever Therapy of Syphilis and Gonococcic Infections. W. M. Simpson, Dayton, Ohio.—p. 1290.
Determining Industrial Nature of Dermatitis. M. B. Sulzberger, New York.—p. 1307.
Family Periodic Paralysis: Use of Tissue Extract. S. Vernon, Willimantic, Conn.—p. 1310.
*Endocrine Study of Hypogonadism and Cryptorchidism. M. B. Gordon, Brooklyn.—p. 1313.
Allergic Manifestations to Cow's Milk. C. G. Kerley, New York.—p. 1320.
Selective Oleothorax: Case Report. C. E. Hamilton and E. Rothstein, Brooklyn.—p. 1323.
Between Mental Health and Mental Disease. B. Liber, New York.—p. 1325.

Artificial Fever Therapy of Syphilis and Gonococcic Infections.—Simpson has given artificial fever treatments to 193 patients, under observation for from six months to four and one-half years, on account of syphilis or gonococcic infection. There were thirty-one patients who received treatment for primary and early secondary syphilis and eighty-nine for neurosyphilis, ocular syphilis or resistant seropositive syphilis. Forty-five patients were treated for gonococcic arthritis, and twenty-eight patients received treatment for gonococcic infection other than gonococcic arthritis. With two exceptions, all persons with syphilis were treated as ambulatory patients. Patients with gonococcic infections have been admitted to the hospital for a period of two weeks. This plan permits close supervision of the patient and eliminates the uncooperative patient. Artificial fever therapy by physical means should be restricted to institutions in which the physician and nurse personnel have received adequate preliminary training. In the hands of skilled and devoted workers this form of therapy seems destined to occupy an increasingly important place in therapeutics. The frequent observation that the best results occurred when neurosyphilis was treated with combined fever and chemotherapy during its earliest manifestations led the author to apply the treatment to patients with primary or early secondary syphilis. The results provide evidence that fever therapy may be of great value in early syphilis, particularly when chemotherapy alone appears to be inadequate. The results obtained in the treatment of symptomatic neurosyphilis, asymptomatic neurosyphilis, ocular syphilis and resistant seropositive syphilis are at least comparable, if not superior, to the results obtained with the more hazardous, time consuming and inconstant malaria therapy. There is evidence that artificial fever therapy fortifies and intensifies the action of antisyphilitic chemotherapeutic agents. High, sustained, controlled artificial fever is the treatment of choice for gonococcic arthritis. Gonococcic arthritis is a manifestation of a systemic disease, requiring systemic treatment. In vitro thermal death time studies and the clinical response of patients with gonococcic infections to artificial fever therapy indicate that it is possible in most instances to destroy gonococci in the various lesions of the disease with high, sustained body temperature. In addition to this sterilizing effect, there is evidence that artificial fever therapy stimulates immune reactions. In twenty-eight patients with gonococcic infection, other than gonococcic arthritis, all evidence of gonococcic urethritis and its complications had disappeared in twenty-five (89 per cent) at the conclusion of the course of fever therapy. The remaining three patients received apparently inadequate fever therapy.

Study of Hypogonadism and Cryptorchidism.—In a review of the records of 521 boys with endocrine or nonendocrine conditions, Gordon found that hypogonadism and cryptorchidism occur almost twice as frequently in the endocrine as in the nonendocrine group. Studies on thirty-eight boys with cryptorchidism and thirty-six with hypogonadism with descended testes show on the average a thyropituitary deficiency as manifested by low basal metabolic rate, low specific dynamic action of proteins and high blood values of cholesterol, chlorides and uric acid. The treatment of cryptorchidism in this series is based on the assumption that it is a symptom in the majority of instances of a disturbed thyropituitary-gonad relationship and not a clinical entity. Three methods are used: (1) oral administration of thyroid and anterior pituitary extracts in increasing dosage, (2) oral administration of thyroid and anterior pituitary extracts and hypodermic injection of anterior pituitary extract and (3) oral administration of thyroid and anterior pituitary extracts and hypodermic injection of anterior pituitary-like extract. Complete descent of the testes was obtained with the three methods as follows: first, 33 per cent; second, 50 per cent; third, 57 per cent. The treatment of cryptorchidism by any of the methods used may be effectual at any age between 2 and 14 years but is more effective after 5 years. No boy should be subjected to an operation for undescended testicles until he has been given the benefit of organotherapy for at least six months. Hypogonadism, especially when associated with adiposogenital dystrophy and hypothyroidism, responds in the majority of instances to oral administration of thyroid and anterior pituitary extracts and hypodermic injections of anterior pituitary extract. Extract of pregnant urine is necessary only in the stubborn and protracted cases. Improvement in the basal metabolic rate, specific dynamic action, general endocrine condition and obesity is generally but not always accompanied by the same degree of improvement in the hypogonadism and cryptorchidism. The effects on the phallus, scrotum and testes are not parallel. Untoward effects may result from the use of either anterior pituitary or anterior pituitary-like extracts.

Northwest Medicine, Seattle

35: 325-364 (Sept.) 1936

Present Day Conception of Shock. W. J. Meek, Madison, Wis.—p. 325.
Practical Points in Medical Treatment of Arthritis. K. K. Sherwood, Kirkland, Wash.—p. 334.
Wounds and Their Repair. J. A. Wolfer, Chicago.—p. 339.
*Treatment of Empyema of Children by Aspiration. J. B. Bilderback and S. H. Goodnight, Portland, Ore.—p. 342.
*Allergy as Cause of Frequent Colds and Chronic Coughs in Children. N. W. Clein, Seattle.—p. 347.

Treatment of Empyema of Children.—Bilderback and Goodnight have treated thirty-two consecutive cases of empyema with a mortality of 6.2 per cent. There were twenty-one cases of metapneumonic empyema and eleven synpneumonic. Twenty-three have been treated by aspiration alone. The average number of aspirations per patient has been twelve. The average number of thoracenteses necessary for the patient to become and stay afebrile was eight. The average number of days for the patient to become and stay afebrile was twenty. The average number of days in the hospital after the last thoracentesis was sixteen. The average hospital stay was forty-two days from the time diagnosis was made. Nine patients have had closed drainage. The average number of aspirations before surgery was five. The average number of days after the diagnosis was made before surgery was twelve. Twenty-one of the thirty-two cases have been admitted in the last four months. Nineteen of these have been treated with repeated aspirations, or 90.4 per cent, in comparison with 42.5 per cent for the first six months. The authors perform thoracentesis with the patient in the sitting position. A little codeine given before aspiration often helps in keeping the child quiet. Infiltration with 1 per cent solution of procaine hydrochloride is then done. A fine 26-gage needle is used for infiltrating the deeper structures including the pleura. When the pleura is penetrated there is a definite "give" to the needle. Aspiration is then done to make sure the needle is in the empyemic cavity. A 13 gage needle with a side opening connected with a rubber tube clamped

with a hemostat is then introduced. A 50 cc. syringe is connected to the tube, the hemostat opened and 50 cc. of pus withdrawn. This is replaced with 40 cc. of air. The process is repeated until air is obtained in the syringe. The cavity is then irrigated with 1:3,300 azochloramide solution until the return is clear. As long as the patient is febrile and there is fluid present on physical examination or fluoroscopy, aspiration should be done daily until he is afebrile. Thoracenteses are then done as necessary according to the child's condition (fever, pulse, appetite and general condition) or according to the fluoroscopic observations. The authors cannot agree with Danna that it is necessary to empty the cavity completely. Although it may be necessary to remove fluid for a short time after the patient is afebrile, suddenly the fluid will not reaccumulate and the little remaining fluid will rapidly absorb. This has been true in practically every case. In replacing the fluid with air the patient is made more comfortable without any danger of a large mediastinal shift. It undoubtedly helps to prevent adhesions. There is less damage to the pleura and there is less danger of puncturing the lung. More complete emptying of the cavity is possible, as the pleura does not come in contact with the needle. Immobilization and rest of the diseased lung is brought about, which aids in healing the focus of infection, without which healing will not take place no matter what the treatment. The air is slowly absorbed, restoring the negative pressure. When the air is absorbed, the cavity is obliterated. Aspiration plays an important part in the surgical treatment of empyema. Diagnostic puncture should always be made to learn the type of fluid and organisms. Aspiration is the method of choice to relieve pressure and toxemia without shock and to get patients in good condition for surgery. A small percentage of the patients are cured before surgery.

Allergy as Cause of Colds and Coughs.—Clein warns that the children presenting the symptoms of frequent colds and chronic coughs have usually visited many physicians. Nevertheless, the true condition is probably overlooked more often than any other common present day disease. These patients have received many types of treatment in an effort to relieve the persistent symptoms. Their history usually states that they have had tonsil and adenoid removal one or more times, "cold shots," vitamin D products, light treatments, sinus treatments or have been sent to a warmer climate for the winter, all with no relief. In fact, they are usually worse. This history should immediately put the physician on his guard to make him think in terms of allergy. In the diagnosis of acute and chronic rhinitis, croup, paranasal sinusitis, laryngitis, tracheitis and bronchitis the possibility of allergy must be considered. In children, acute and chronic infections may obscure a primary underlying allergic condition. The most constant symptom of nasal allergy is a "stuffy nose which is always worse on arising in the morning." A chronic cough, occurring especially during the early morning hours, is a preasthmatic symptom. Treatment on the basis of elimination and specific desensitization of pollens, epidermals and dust gives excellent results in children.

Ohio State Medical Journal, Columbus

32: 797-924 (Sept. 1) 1936

*Causes for Failure in Treatment of Diabetes. R. W. Finley, Cleveland.—p. 813.
Indications for Splenectomy. R. W. Good, Cincinnati.—p. 817.
Some Clinical Observations on Maxillary Antrum. E. King, Cincinnati.—p. 821.
Significance of Midpelvic Trapezoid. J. P. Gardiner, Toledo.—p. 824.
Strongyloides Stercoralis. E. A. Wagner, Cincinnati.—p. 826.
Chronic Gastritis, Duodenitis and Their Relation to Peptic Ulcer. W. Stix, Cincinnati.—p. 829.
End Results of Treatment of Lung Abscess. S. O. Freedlander, Cleveland.—p. 832.
Situs Inversus Viscerum. A. C. Siddall, Oberlin.—p. 836.
Surgical Causerie: Desultory Discussion of Certain Commonplace Features of Surgical Practice Often Ignored as Simple and Obvious But Worthy of Restatement and Emphasis. L. L. Bigelow, Columbus.—p. 837.
Treatment of Abortions. J. D. Heiman and J. M. Stevenson, Cincinnati.—p. 844.
Intracranial Arteriovenous Aneurysm: Case Report: Recovery After Internal Carotid Artery Ligation. M. D. Friedman and H. M. Gans, Cleveland.—p. 849.
Management of Cross Eyed Children. H. V. Phelan, Cleveland.—p. 851.

Causes for Failure in Treatment of Diabetes.—Finley divides the treatment of diabetes into three parts. 1. To clear up or prevent the immediate symptoms of dextrose deprivation, such as glycosuria, dehydration, malnutrition and the profound cellular chemical changes antecedent to and productive of severe acidosis and coma. 2. To guard the patient against considering his diabetes a threat against his self esteem. 3. To help the patient evolve a plan or pattern of dietary and therefore of social and work conduct, which he is willing to follow and which gives most promise of avoiding the development or the advance of arteriosclerosis. These three objects run concurrently and are best begun at the first conference with the patient. Undernutrition must be avoided and a hyperglycemia alone or a glycosuria alone cannot be accepted as a trustworthy evidence of the condition. Attempts to keep a patient on a diet too low in nutritional value in order to clear the urine of sugar when the blood sugar is within acceptable limits, to keep a blood sugar at some conventionally accepted normal level when the kidneys are not leaking sugar or to avoid the use of insulin cannot be accepted as the best medical practice, because it may be using a state of undernutrition as the means to treat a chemical change. Persistent glucosuria, when present with persistent hyperglycemia, is bound to lead sooner or later to undernutrition and must be cleared if possible. Glycosuria in the absence of a chronic focus of infection is due to a delayed absorptive activity of the tubules of the kidney, which returns the sugar from the glomerular urine to the blood. The logical treatment seems to be to allow a diet which yields enough dextrose to supply both that lost in the urine and that needed to maintain a normal state of nutrition, and then to follow the blood sugar more frequently than would be called for otherwise in order to be sure that the glycosuria and a hyperglycemia are not occurring together.

Oklahoma State Medical Assn. Journal, McAlester

29: 309-346 (Sept.) 1936

Fever Therapy in Ocular Manifestations of Syphilis. A. N. Lemoine, Kansas City, Mo.—p. 309.
Problem of Treatment of Cancer of Breast. R. E. Myers, Oklahoma City.—p. 314.
Visceral Injuries. F. A. Hudson, Enid.—p. 319.
Digitalis: Its Uses and Abuses. G. H. Niemann and D. M. Gordon, Ponca City.—p. 324.
Prenatal Care, with Especial Reference to External Version. H. M. McClure, Chickasha.—p. 327.
Intranasal Oxygen Therapy. H. K. Speed, Sayre.—p. 330.

Philippine Islands Med. Association Journal, Manila

16: 461-534 (Aug.) 1936

Embryonated Eggs of Ascaris Lumbricoides in Mesenteric Tissue of Man, with Especial Reference to Possibility of Autoinfestation. C. M. Africa and E. Y. Garcia, Manila.—p. 461.
Maternal Mortality in the Philippines: Study of Statistical Records of Bureau of Health, Manila, from 1930 to 1934. F. Z. Cruz, Manila.—p. 469.
Carcinoma of Ovary in Childhood. F. W. Meyer, Capiz, Capiz.—p. 477.
Hysteria: I. Hysterical Simulation of Organic Diseases. G. F. Austria, Manila.—p. 481.
Id.: II. Mystery Woman from Cagayan. A. L. Chavez, Manila.—p. 489.
Id.: III. Interpretation of Clinical Findings. W. Vitug, Manila.—p. 495.

Philippine Journal of Science, Manila

59: 149-316 (Feb.) 1936. Partial Index

Effect of Bile on Viability and General Biology of Intestinal Pathogenic Bacteria. O. Schöbl, M. Nukada and T. Komatsu, Omori, Tokyo, Japan.—p. 149.
*Certain Factors Supposed to Influence Results of Treatment of Leprosy. J. G. Tolentino, Mandawe, Cebu.—p. 163.

Treatment of Leprosy.—Tolentino reviewed the records of 477 patients admitted to the Eversley Childs Treatment Station from 1929 to 1933 inclusive. These patients were treated almost entirely with Hydnocarpus wightiana oil or its ethyl esters either iodized or creosoted. The severity of skin lesions was found inversely proportional to the percentage of paroled patients. The duration of the disease was found to have apparently no relation to the results of treatment. The age on admission was found to have a definite relation to the results of the treatment in that the first, fourth, fifth and sixth decades gave higher percentages of paroled patients than the other decades. The results, if plotted with age, gave a curve that goes down from the first to the third as the lowest point, gradually rising to the fifth decade as the highest point, from which it goes down again. The results of the treatment were

found to be apparently better among women than among the men, except in the fifth decade, probably owing to the menopause, which disturbs the physiologic life of women. Puberty and childbirth did not seem to be important factors in the treatment among these cases. The degree of nutrition was found to have a definite relation to the results of treatment. The results are inversely proportional to the degree of obesity of the patients. It appears that excess fat in the body has an unfavorable effect on the treatment of leprosy.

Public Health Reports, Washington, D. C.

51: 1293-1326 (Sept. 18) 1936

Brain Reaction in Guinea-Pigs Infected with Endemic Typhus, Epidemic (European) Typhus, and Rocky Mountain Spotted Fever, Eastern and Western Types. R. D. Lillie and R. E. Dyer.—p. 1293.

Time Changes in Relative Mortality from Accidental Burns Among Children in Different Geographic Regions of the United States, 1925-1932: Studies on Fatal Accidents of Childhood Number Three. W. M. Gafafer.—p. 1308.

Southwestern Medicine, Phoenix, Ariz.

20: 287-324 (Aug.) 1936

Vaccine Therapy of Chronic Arthritis. B. L. Wyatt, H. E. Thompson and R. A. Hicks, Tucson, Ariz.—p. 287.

Management and Surgery of Traumatic Cataract. F. C. Cordes, San Francisco.—p. 290.

Acne Vulgaris. L. M. Smith, El Paso, Texas.—p. 293.

Intradermal Use of Alum Precipitated Toxoid. C. W. Gerber, Las Cruces, N. M.—p. 294.

How Can We Reduce Death Rate from Cancer? J. M. Flude, Hollywood, Calif.—p. 295.

Treatment of Pollen and Other Inhalant Allergy. A. H. Rowe and J. B. Greaser, Oakland, Calif.—p. 297.

Treatment of Heart Disease by the General Practitioner. R. S. Flinn, Phoenix, Ariz.—p. 302.

Diagnosis of Early Strain of Hearts Without Valvular Lesion. O. H. Brown, Phoenix, Ariz.—p. 305.

Treatment of Acute Diseases of Ear. R. C. Martin, San Francisco. —p. 307.

Texas State Journal of Medicine, Fort Worth

32: 319-380 (Sept.) 1936

*Vaccine Treatment of Chronic Arthritis by Improved Intravenous Method. A. E. Greer, Houston.—p. 324.

Nonspecific Granuloma of Gastro-Intestinal Tract: Report of Two Cases in Ileocecal Region. J. L. Taylor, Houston.—p. 334.

Important Factors in Management of Urinary Infections. J. H. Shane, Dallas.—p. 337.

Diagnosis and Conservative Management of Disturbances of Circulation in Extremities. G. Herrmann, Galveston, and L. Herrmann, Cincinnati.—p. 340.

Short Wave Diathermy, an Adjunct in Treatment of Diseases of Eye, Ear and Nose. H. L. Hilgartner and H. L. Hilgartner Jr., Austin. —p. 346.

Papillomatosis of Cornea and Conjunctiva. R. E. Windham, San Angelo.—p. 348.

Cells of Bone Marrow and Blood, with New Theory of Mechanism of Hypocytic Leukosis. J. M. Hill, Dallas.—p. 352.

Present-Day Conceptions of Malaria Therapy. W. T. Dawson, Galveston.—p. 358.

Field Work and Drainage as It Relates to Malaria Control. E. D. Hopkins, Austin.—p. 363.

Social Security Act as It Relates to Public Health in Texas. W. K. Sharp Jr., New Orleans.—p. 365.

Vaccine Treatment of Chronic Arthritis.—Greer searches for focal infections and prepares the vaccines in the usual manner. A period of vaccine treatment is first instituted before an attempt is made to deal with the focal area. In this way the grave danger of precipitating extensive lesions, which at times quickly follow the removal of infective foci, may be obviated. The first intravenous inoculation consists of 100 micro-organisms. Usually, after the inoculation the patients notice decidedly favorable responses consisting of a lessening of their joint symptoms, muscular relaxation and a sense of euphoria. This response may appear from thirty minutes to four hours after the injection and may persist for as long as forty-eight hours. If the patient's condition remains entirely stationary following the inoculation, the next dose is increased to 200 micro-organisms and continued in this manner until a favorable response is obtained. Only when the dose, which previously gave a favorable response, fails in that direction, is the quantity increased. If a reaction is elicited, the dosage is considerably reduced and a favorable response again sought for. The interval of time between inoculations is gaged entirely by the duration and the character of the favorable responses following their administration. If these two factors are prominent, the subsequent injection is made when the patient's symptoms begin to level off into a stationary period. Ordinarily this interval is approximately forty-eight hours. There were thirty-two women and eighteen men treated. Their average age was 40.8 years. The duration of onset of the disease varied from one week to ten years. Only one joint was involved in fifteen patients, two joints in six, three joints in four, and five joints in twenty-four. Foci of infection were found in thirty-nine patients, and in only eleven of this number was it possible to eradicate completely the apparent focus by surgery. These were all afflicted with either diseased tonsils or teeth. The others were treated palliatively. The period of time during which these patients were treated varied from one month to three years; the average period was 10.5 months. Improvement was obtained in forty-four patients (88 per cent). The benefit in four of these was moderate in degree. The remainder (80 per cent) were greatly helped. Twenty-nine patients apparently recovered. Three of this number suffered a recurrence of arthritis, leaving twenty-six patients (50.4 per cent) who had no recurrences. The average period was more than eighteen months since the discharge of the latter patients and more than twenty-two months in all but seven. The remaining nineteen patients, classified as cured, were completely well after a period of twenty-four months. Therefore at least 73 per cent of the recovered patients may be estimated as having been cured, since an average time of two years had passed since they were pronounced well. Of a control group of fifty-three cases of chronic atrophic arthritis which were treated immediately preceding the institution of the intravenous vaccine treatment, 55.5 per cent showed improvement, as contrasted with the 80 per cent. This considerable difference bespeaks the greater advantage of the intravenous method in the treatment of chronic rheumatoid arthritis. Stainsby's poor results with the subcutaneous method accentuate this belief.

West Virginia Medical Journal, Charleston

32: 441-488 (Oct.) 1936

Breech Presentation. G. A. Ulrich, Philadelphia.—p. 441.

Perineum During Labor. W. W. Point, Charleston.—p. 455.

*Electrotherapy in Endocervicitis: Report of Series of Cases. A. M. Dearman, Parkersburg.—p. 458.

Lymphogranuloma Venereum. A. P. Hudgins, Charleston.—p. 462.

Forty Years of Obstetrics. C. H. Maxwell, Morgantown.—p. 467.

Cesarean Section: Summarization of 197 Cases. J. R. Bloss, Huntington.—p. 470.

Electrotherapy in Endocervicitis.—Dearman has used the Cherry electrocoagulation treatment on 269 cases. Only twice was it necessary to repeat the treatment for complete healing of the endocervicitis. Cauterization was used on seventy-one patients requiring a repeated treatment thirty-three times, making a total of 104 cauterizations. All coagulation treatments were given within the last two and one-half years. Seven have since become pregnant. Two have been delivered with no evidence of dystocia. One case of unrecognized pregnancy was undisturbed. Should an acute condition of the pelvis develop following cauterization or electrocoagulation, it should be treated as any acute pelvic condition, such as follow abortions or deliveries. The author's preference would be the Elliott treatment, with no rush to open the abdomen and, if abscess formed, drainage if possible by posterior vaginal section or Cullen's method. There is one variation in his later care of the patients from other reports he has studied. He instructs them to wash frequently but not to take douches. He makes no effort to remove the coagulum but dilates the canal with a small applicator with tincture of iodine. Before the first treatment he cleanses the cervix with an antiseptic and uses 15 per cent cocaine. Treatment is somewhat painful, but the pain lasts only about half a minute. Ideal results with the cautery require greater skill than with the Cherry treatment. Stenosis is due to overcauterization into muscle, and recurring endocervicitis is due to undercauterization that does not reach the diseased glandular tissues. Treatment of the cervical canal to within one-eighth inch of the internals is necessary for cure. This is more difficult when accomplished with the cautery. In the Cherry cases there were two cases of mild cervical stenosis that were relieved easily by one dilation at the office.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

33: 165-250 (July-Sept.) 1936

*Blood Studies in Infancy: Comparison of Red Cell Counts and Hemoglobin Values of Premature Infants and Twins with Those of Full-Term Children. Alice Stewart.—p. 165.
Epidemic Catarrhal Jaundice, with Especial Reference to Its Epidemiology. W. N. Pickles.—p. 192.
Concurrent Diphtheria and Varicella with Hemorrhagic Features: Case. J. W. Healy.—p. 201.
Abnormal Dick Reaction. E. W. Goodall.—p. 207.

Blood Studies in Infancy.—Stewart reviews the more important blood studies in infancy and reports a series of blood counts and hemoglobin estimations on full-term and premature infants. For comparison a number of figures taken from the literature are quoted. The hemoglobin percentage and red cell counts of sixty-one infants have been recorded at weekly intervals between the ages of 2 days and 27 weeks. There is a rapid reduction in the hemoglobin immediately after birth, the maximal drop occurring between the ninth and the eleventh week. The red cells also fall, but the color index remains high and is often greater than 1.0. After the third month there is a gradual rise in hemoglobin and red cells until the sixth month. Full-term children reach a higher hemoglobin level than twins or premature children (84 and 70 per cent respectively), but the average counts show little difference in the two series (3.97 and 3.92 millions respectively). The hemoglobin values in the present full-term series are higher than the corresponding ones obtained by Mackay for breast-fed children and approximate to her ideal "normal" standards. Those for the premature infants and twins are also higher than Mackay's series for infants of low birth weight but correspond closely with the observations of Josephs in premature infants. It is rare for the color index to be low before the seventh month, the average value at this age being 0.92. In older children who develop anemia the color index is usually low, the number of red cells often remaining normal in spite of the hemoglobin falling to 50 per cent.

British Medical Journal, London

2: 523-572 (Sept. 12) 1936

Anemia in Poor Class Women, with Especial Reference to Pregnancy and Menstruation. H. W. Fullerton.—p. 523.
Anemia and Toxemia of Pregnancy. Jocelyn Moore and E. M. Pillman-Williams.—p. 528.
Mild Radium Therapy. F. H. Humphris.—p. 532.
Gastrogenous Polyneuritis. A. H. Douthwaite.—p. 535.
Blood Replacement After Hemorrhage. W. Hunter.—p. 537.

Irish Journal of Medical Science, Dublin

No. **127:** 289-336 (July) 1936

*Transplantation of Cornea. J. W. T. Thomas.—p. 289.
Ophthalmology in Aviation. F. S. Lavery.—p. 302.
Spontaneous Pneumothorax. G. Bewley.—p. 309.
Observations on Some Aspects of the School Dental Service in Cork City. R. F. Twomey.—p. 313.
Posterior Muscle Splitting Incision for Apicolysis. E. N. MacDermott.—p. 321.
Paraganglions in Pulmonary Plexus. D. T. Barry.—p. 323.
Pyramidon Test for Blood. E. Harvey.—p. 326.

Transplantation of Cornea.—Thomas has done thirty-six consecutive operations for corneal transplantation, of which twenty-four were performed on twenty-one suitable eyes. About 80 per cent of the patients were benefited by the operation, 28 per cent were clear with vision of 6/36 or better, 70 per cent of the operations were successful, and 25 per cent resulted in clear grafts. The author quotes the results of Elschnig, Filatov and Castroviejo from which it is seen that the operation of corneal transplantation is one that should be included in the list of operative procedures which can be legitimately employed in suitable cases. The study of the operation is yet far from completed. Attention to detail is an essential requirement, and minute experimental departures from routine should be tried singly and not collectively, so that a logical inference may be drawn from the result. The outlook in the future for patients more or less blind with corneal opacities is decidedly encouraging, and in suitable cases there is even now a 70 per cent chance of improvement and a 25 per cent chance of obtaining good useful vision. The future will hold some chance of improvement for many of the cases that are, for various reasons, classified as unfavorable.

Journal of Laryngology and Otology, London

51: 563-618 (Sept.) 1936

Inflammatory Tumors of True Vocal Cords, Direct Laryngoscopic Observations. G. Tucker.—p. 563.
Some Remarks on Surgical Treatment of Peritonsillar Inflammations. R. Schroeder.—p. 574.
Vasomotor Control of Ear. P. Frazer.—p. 579.

Journal of Pathology and Bacteriology, Edinburgh

43: 233-440 (Sept.) 1936

Bacteriophage Specific for O-Resistant V Form of Bacillus Typhosus. J. Craigie and K. F. Brandon.—p. 233.
Identification of V and W Forms of Bacillus Typhosus and Occurrence of V Form in Cases of Typhoid Fever and in Carriers. J. Craigie and K. F. Brandon.—p. 249.
Influence of Aeration and Diffusion on Toxin Formation by Corynebacterium Diphtheriae. C. Siebenmann.—p. 261.
Carcinogenic Action of Radium in Rabbit: Effect of Prolonged Irradiation with Screened Radium. Joan M. Ross.—p. 267.
Embryonal Cell Liposarcoma. A. F. B. Shaw.—p. 277.
Disposal of Barium Sulfate in Abdominal Cavity. J. C. Thomas.—p. 285.
Epidemiologic Aspects of Spontaneously Acquired Vaccinia in Rabbit. Louise Pearce, P. D. Rosahn and C. K. Hu.—p. 299.
Tuberculous Verrucose Endocarditis. T. B. Davie.—p. 313.
Primary Lesion in Phosphate Nephritis. J. B. Duguid.—p. 321.
Pathologic Changes Due to Infection with Virus of Lymphocytic Choriomeningitis. G. M. Findlay and Ruby O. Stern.—p. 327.
Short Marchi Technic. R. J. C. Stewart.—p. 339.
Histologic Changes in Sex Organs of Spayed Rats Induced by Testosterone and Estrone. V. Korenchevsky and Marjorie Dennison.—p. 345.
Nature of Pulmonary Alveolar Lining and Origin of Alveolar Phagocyte. M. E. Gazayerli.—p. 357.
*Complement Fixation Test in Diagnosis of Weil's Disease. A. W. Pot and C. G. J. Dornickx.—p. 367.
Failure of Staphylococcus to Grow from Small Inocula in Routine Laboratory Mediums. R. A. Q. O'Meara and J. C. Macsween.—p. 373.
Toxins of Staphylococcus, with Especial Reference to Estimation of Potency. F. G. Morgan and J. J. Graydon.—p. 385.
Serologic Types Among Gravis Strains of Corynebacterium Diphtheriae and Their Distribution. D. T. Robinson and A. L. P. Peeney.—p. 403.
Experiments in Carcinogenesis: Effect of Subcutaneous and Intraperitoneal Injection of Lard, Olive Oil and Other Fatty Materials in Rats and Mice. H. Burrows, I. Hieger and E. L. Kennaway.—p. 419.

Complement Fixation Test in Diagnosis of Weil's Disease.—Pot and Dornickx applied the complement fixation reaction in the diagnosis of Weil's disease. In the preparation of the antigen cultures of leptospira approximately one week old in Korthof's medium are centrifugated at 3,000 revolutions per minute or more for three or four hours. The supernatant fluid is pipetted off and the deposit is resuspended in 0.3 per cent phenol-saline solution. The quantity must be 1:10 of the original quantity of the fluid medium. The antigen is a turbid fluid, which shows only remains of leptospira after it has been in the ice chest for a few days. For the titration of the antigen a series of antigen dilutions in phenol-saline solution is mixed with a hundredfold dilution of an inactivated highly positive serum and a tenfold dilution of fresh guinea-pig serum (complement), 0.3 cc. of each. After thorough shaking the tubes are incubated at 37 C. for one hour. After this, 0.6 cc. of the hemolytic system is added. The rack is incubated for thirty minutes, after which the reading is taken. If the antigen has been sufficiently active, hemolysis is completely inhibited in the first tubes, which contain the largest quantities of antigen. In the remaining tubes the inhibition is incomplete or absent. The last tube with complete inhibition indicates the titer. In the test proper, in accordance with Gaehtgens, the authors carry out the test quantitatively; i. e., they determine the dilution of a positive serum which just gives complete inhibition. The reaction is not more intricate in its execution than the Wassermann test. There were 100 serums sent in for examination for Weil's disease in which the results of the agglutination and lysis tests could be compared with those of complement fixation. There were seventy-three serums in which both reactions were negative, nineteen in which both reactions were positive, one in which both reactions were doubtful and seven serums in which the complement fixation test was negative and agglutination and lysis tests were slightly positive.

Journal of State Medicine, London

44: 435-496 (Aug.) 1936

Rôle of the General Practitioner in Obstetric Practice. J. Young.—p. 435.
Id. J. Dunlop.—p. 440.
Id.: From the Public Health Point of View. J. A. Stephen.—p. 446.
The Place of the Medical Officer of Health in Administration of the Municipal Hospital. E. K. Macdonald.—p. 455.
Investigation of Anemias of Pregnancy and Puerperium. Moira Stevenson.—p. 467.
Laboratory Aspect of Anemias of Pregnancy. W. F. Harvey.—p. 478.

Lancet, London

2: 549-608 (Sept. 5) 1936

Treatment of Angina Pectoris. B. Parsons-Smith.—p. 549.
Choice of Patients, with Angina of Effort, for Thyroidectomy. G. Bourne.—p. 551.
Carcinogenesis as Means of Reducing Cancer Mortality. S. Peller.—p. 552.
*Impaired Glucose Tolerance in Certain Alimentary Disorders of Childhood, with Remarks on Their Treatment with Liver Extract. C. W. Ross.—p. 556.
*Intravenous or Intraperitoneal Antitoxin Treatment, Combined with Short Isolation Period, in Scarlet Fever. H. S. Banks.—p. 559.

Impaired Dextrose Tolerance in Alimentary Disorders of Childhood.—Ross has found the dextrose tolerance curves to be high in the fifteen cases so far examined, even though some of these did not show gross flattening of the oral curve. In ten cases of chronic intestinal indigestion investigated, he has found a normal fecal fat output associated with a flat oral dextrose tolerance curve and a high intravenous one. He has investigated three cases of abdominal tuberculosis which have shown flat oral and high intravenous curves. The administration of liquid liver extract (half an ounce [15 cc.] twice daily), either enterally or parenterally, has been shown to improve the dextrose tolerance when it is impaired in these conditions.

Intravenous or Intraperitoneal Antitoxin Treatment.—This study deals with a series of 1,877 cases treated with intravenous serum and controlled with a nonserum treated series of 1,419 cases, mostly in separate wards, during the years 1933 and 1934. Banks found that a single dose of from 10 to 20 cc. of scarlatinal antitoxin injected intravenously or intraperitoneally within the first three days of onset considerably modifies the course of both simple and septic scarlet fever. By this means the average hospital isolation period has been reduced successfully to about two weeks for adults and three weeks or less for children. The application of this routine in all definite cases of scarlet fever admitted to hospital wards in the acute stage has been associated with a substantial and significant reduction of morbidity. Thus, otitis media has been reduced to one third and nephritis to less than one seventh of the incidence in untreated controls. The intraperitoneal route of injection of antitoxin in this disease has yielded results almost identical with those of the intravenous. Since the technic of intraperitoneal injection at all ages is simple, and danger from shock is negligible, with adequate aseptic safeguards the method is susceptible of wide practical application.

2: 665-722 (Sept. 19) 1936

Some Problems in Antenatal Supervision. G. I. Strachan.—p. 665.
Experimental Observations on Rationale of Radiotherapy. W. Cramer.—p. 668.
*Method of Spacing Radiation in Treatment of Tumors. J. C. Mottram and J. Morton.—p. 672.
Increasing Effectiveness of Testosterone. A. S. Parkes.—p. 674.
Vascular Tumor Seated in Extensor Hallucis Brevis Muscle. F. Forty.—p. 676.
Mental Sequels of Chronic Epidemic Encephalitis and Their Prognosis. H. A. Cooper.—p. 677.
*Tropical Macrocytic Anemia. L. E. Napier.—p. 679.

Method of Spacing Irradiation in Treatment of Tumors.—Mottram and Morton state that the method of spacing irradiations is based on two facts. The first is that cells under anaerobiosis are more resistant to irradiation than well oxygenated cells. The second is that radiation, through action on capillaries and small blood vessels, interferes with the circulation of the tissue or tumors irradiated, so much so that when an animal bearing two tumors, one irradiated and one nonirradiated, is inoculated with india ink a few days after the application of radiation, it is found that the ink enters the normal tumor but fails to gain entrance into the irradiated tumor. It follows that, during the interference with the circulation following irradiation, tumors must be radioresistant and that they will not again become radiosensitive until this damage to the blood vessels has been recovered from. Thence the system of spacing irradiation which took account of these factors might in certain cases prove both practicable and justifiable in the treatment of patients suffering from malignant disease. Treatment is administered either continuously or at short intervals until the tumor shows an initial decrease in size; it is then discontinued until the measurements show an increase, when the process is repeated. Side by side with the treatment of patients, a set of tar warts in mice has been treated by spaced gamma irradiation. These likewise showed regression following treatment within a day or two and without any latent period. More especially is this the case once the growth of the tumor has been controlled, when small doses of radiation suffice to produce much regression. On the whole it appears that these diminutions in size are not due to destruction and disappearance of tumor cells but rather to fluctuations in the blood supply to the tumors, which form waves on the slower regression, owing to disappearance of tumor cells. By applying treatment only during periods of growth and withholding it during periods of regression, tar warts have been cured in mice and tumors in man have been benefited with no more than trivial damage to the surrounding normal tissues, such as transient erythema or partial epilation.

Tropical Macrocytic Anemia.—Among the cases of anemia admitted to the Hospital for Tropical Diseases in Calcutta during the last year, Napier observed eleven cases of macrocytic anemia that responded to treatment with an autolyzed yeast preparation; four of these patients were nonpregnant women and seven were men. The hematologic observations in these cases are similar to the changes in Wills' tropical macrocytic anemia, except that the indirect van den Bergh reaction was positive in nine, and there was other evidence of increased blood destruction. It seems that, in addition to the vitamin B complex deficiency, there must be other causes of this condition. It is suggested that excess hemolysis of red blood cells may be an associated factor in this macrocytic anemia.

Medical Journal of Australia, Sydney

2: 203-250 (Aug. 15) 1936

Statistical Tabulation of Results of Treatment of Carcinoma of Tongue. M. J. Holmes.—p. 203.
Treatment of Carcinoma of Tongue. H. Searby.—p. 210.
Carcinoma of Tongue. I. B. Jose.—p. 217.
*Some Observations in Radium Treatment of Cancer of Tongue. V. McDowall.—p. 218.
*Rodent Ulcer: Its Development on Limbs. H. Newland.—p. 221.
Primary Carcinoma Unsuspected by the Clinician. A. J. Trinca and R. A. Willis.—p. 222.
Deep X-Ray Therapy in Treatment of Cancer of Tongue. W. R. Frayne.—p. 227.
Radiologic Treatment of Cancer of Tongue. L. J. Clendinnen.—p. 228.

Radium Treatment of Cancer of Tongue.—McDowall has been treating cancer of the tongue since 1928 with the interstitial application of radium. Although his figures are small, he finds on comparing them with those of other workers who have larger numbers to deal with that there is not a great deal of difference in the average results. Of his patients treated in 1929, approximately 33 per cent are now alive and apparently cured. The greater number of the 33 per cent of cured patients come from what he considers to be the favorable group, that is, those with no palpable glandular involvement at the beginning of treatment. Of the patients in whom there were palpable glands at the time of treatment, only two now survive, and he is of the opinion that the result in these two cases was due more to other causes than to the method of treatment. In most of the patients with glandular involvement who received radiation treatment there was some improvement. This amounted in a few instances to a temporary disappearance of the glands and in others to a shrinkage or regression of the glands. In the majority even of the unfavorable cases there has been at first considerable diminution of pain. Subsequent treatments to the glandular growths were never so effective as the first. In the majority of cases in which there was secondary glandular involvement the period of survival ranged from a few weeks to eighteen months, although the average survival time was from seven to eight months.

Rodent Ulcer.—In more than 600 private cases of rodent ulcer, Newland has found five examples of rodent ulcer of the upper extremity. The growths had been present for from ten to thirteen years. The situation of the growth on the limb was on the back of the wrist, the antero-external aspect of the elbow, and the middle of the radial border of the forearm in the men, and the front of the elbow and the middle of the flexor aspect of the forearm in the women. Associated with the rodent ulcers were other growths in every instance but one. All the growths were situated on regions of the upper extremity subject to exposure to the weather, and the skin of all the patients showed evidence of this. Two of the men cited injuries to explain the development of the growth. The author treats early rodent ulcers in the following way unless the growth has attacked the bone, cartilage or conjunctiva: A local anesthetic of procaine hydrochloride is injected around the growth. When the part is anesthetized, the growth is curetted with a stainless steel curet. A rodent ulcer yields to a curet just like granulation tissue, and a smooth surface is left. After a thorough curetting, only a thin layer of the rodent ulcer cells is likely to remain. These are still further reduced by searing the raw surface with an electric cautery. This has the advantage of leaving a dry surface as well as destroying cancer cells. One or two radium 10 mg. plaques are now applied without a filter to the curetted surface and to the edges for an hour. The process is repeated, a thin filter being used. Except in the case of insignificant growths, an erythema dose of x-rays is given as well. With this treatment very few recurrences have occurred and the cosmetic results have been excellent.

Practitioner, London

137: 257-392 (Sept.) 1936

Industrial Medicine. J. Simon.—p. 257.
Prevention of Disease in Industry. J. C. Bridge.—p. 260.
Physical Standards in Industrial Health. D. Munro.—p. 270.
Industrial Absenteeism. N. H. Mummery.—p. 280.
Industrial Poisons. D. Hunter.—p. 290.
*Industrial Diseases of Lungs, with Especial Reference to Silicosis. W. E. Cooke.—p. 314.
Psychologic Disorders in Industry. M. Culpin.—p. 324.
Some Practical Aspects of Industrial Hygiene. D. Stewart.—p. 334.
Prevention and Cure of Occupational Dermatitis. P. B. Mumford.—p. 343.
Hypnotic Drugs. L. I. M. Castleden.—p. 358.
General Practice: No. III. Legal Aspect of Partnership and Assistantship. O. A. Hempson.—p. 369.

Industrial Diseases of Lungs.—Cooke in his discussion of the industrial diseases of the lungs states that of all the dusts generated during mining, quarrying and manufacturing processes only two (silica and asbestos) have been proved to be biologically active and to cause extensive disease in workers. To produce silicosis there must be an admixture of silica. The incidence of the disease is extremely small and falls solely on those engaged in drilling and handling sandstone. About 60 per cent of the dust particles are trapped by the physiologic defense of the respiratory tract before reaching the larynx. The protective mechanism is very efficient unless constantly overwhelmed over a long period by the presence of particles of dust in the air less than 10 microns in length. Workers exposed for years to atmospheres containing not more than from 10 to 20 million particles per cubic foot escape, whereas in those breathing higher concentrations silicosis eventually develops. The length of time required for silicosis and asbestosis to develop and death to ensue may be gathered from the report of the chief medical inspector of factories, in which the average duration of employment varied from 6.4 to 39.2 years. To produce a reaction either in subcutaneous tissue or in the lungs a dust must be soluble. Silica is soluble to the extent of 1 in 10,000 parts of distilled water, and the solubility is increased by the presence of alkalis, and increased too as the size of the particle diminishes. At least 75 per cent of patients with silicosis contract tuberculosis. The silicotic lung is susceptible to infection and this susceptibility increases with the amount of damage produced by silica. Other infections are not uncommon. Influenza, bronchitis and pneumonia account for 6 per cent of the deaths of those certified as silicosis in South Africa. The earliest roentgen manifestation is an increase in the density of the shadows of the vascular tree. The earliest indications are in the middle and lower zones of the lung. Increase in the root shadow due to involvement of the glands is constant.

South African Medical Journal, Cape Town

10: 523-564 (Aug. 8) 1936

The Crime of Abortion. C. C. Jarvis.—p. 525.
Abortion: Its Ethical, Legal and Medical Aspects. S. M. de Kock.—p. 526.
Artificial Abortion. I. P. Schabort.—p. 534.
The Medicolegal Aspect of Abortion. W. F. Rhodes.—p. 539.
The Rural Hospital as an Agent in Native Health Education. G. W. Gale.—p. 541.
Salmonella Suipestifer var. Afri. Aust. in an Outbreak of Food Poisoning in Cape Peninsula. E. C. Greenfield and M. H. Judd.—p. 544.
Meningococcic Suppurative Arthritis of Cryptogenic Origin. W. Campbell and E. C. Greenfield.—p. 545.

Quart. Bull., Health Org., League of Nations, Geneva

5: 211-390 (June) 1936

Biothermic Method of Fly Destruction and Ease with Which It Can Be Adapted to Rural Conditions. E. Roubaud.—p. 214.
Investigations into Fly Density in Hungary in Years 1934 and 1935. F. Lörincz and G. Makara.—p. 219.
Flies Visiting Human Feces in Hungary. F. Lörincz, G. Szappanos and G. Makara.—p. 228.
Cause and Prevention of Acute Rheumatism in Childhood. B. Schlesinger.—p. 239.
Incidence and Importance in the United States of America of Rheumatic Disease in Children. R. Pemberton.—p. 247.
Rôle of Clinical Medicine in Prevention of Rheumatic Invalidity. M. P. Weil.—p. 252.
Rheumatism and Occupation in the Union of Soviet Socialist Republics. Danischewsky.—p. 255.
Prevention of Permanent Disability and Measures to Be Taken in Case of Invalids, Especially Those Suffering from Sequels of Rheumatism. G. Kahlmeter.—p. 269.
Prevention and Cure of Rheumatism: International Action. J. van Breemen.—p. 277.
Occurrence in Fresh and Brackish Water of Larvae of "A. Maculipennis Atroparvus" and "Messeae" in Some Coastal Provinces of the Netherlands. N. H. Swellengrebel, A. de Buck, M. H. Kraan and G. van der Torren.—p. 280.
Investigations on Transmission of Malaria in Some Villages North of Amsterdam. N. H. Swellengrebel, A. de Buck, E. Schoute and M. H. Kraan.—p. 295.
Trachoma and Antitrachoma Work in Turkey. H. Kural and N. Ayberk.—p. 353.
*Interrelation of Antigenic Properties of Snake Venoms and Its Bearing on Polyvalence and the Assay of Serums. E. Grasset.—p. 367.

Antigenic Properties of Snake Venoms.—Grasset believes that the standardization of venom antibodies generally, and in this particular instance of the viperidae and colubridae antibodies of polyvalent serum should be effected by a preliminary comparison with a specific standard serum for each of the two groups. Such serums, the neutralizing potency of which is exactly determined, would, after being dried, enable a defined specific antivenom unit to be adopted. By determining test doses of the corresponding venoms in relation to the antivenom unit adopted for these specific serums and carrying out subsidiary assays of the polyvalent serum in relation to these test doses, it will be possible to measure the antibody content of this serum in terms of anticobra and anti-Bitis units. The assay of antivenom serums in relation to standard serums would have theoretical and practical advantages over a method of direct neutralization tests against increasing quantities of venom (mg.) or methods involving the use of numerous lethal doses of venom, for the toxicity of the latter is liable to vary greatly under the influence of individual and seasonal factors, the effects of life in captivity and diet. The international standardization of antivenom serums on a principle similar to that adopted for the standardization of bacterial antitoxins would have the advantage of providing a satisfactory standard of reference for the assessment of the specific, relative and therapeutic neutralizing potency of antivenom serums, at all events within such limits as the specificity of venom antigens allows.

Chinese Medical Journal, Peiping

50: 761-884 (June) 1936

Urinary Stone Formation, Clinical and Experimental. J. Gray.—p. 761.
Influence of Diet on Formation of Urinary Calculi. H. C. Hou.—p. 787.
Composition of Vesical Calculi. T. K. Lien.—p. 797.
Extravasation of Urine: Study of Thirty Cases. G. Y. Char, H. E. Shih and C. P. Yang.—p. 807.
Congenital Solitary Kidney. H. E. Shih and G. Y. Char.—p. 821.
Geographical Distribution of Vesical Calculus in China. J. L. Maxwell.—p. 827.
Bladder Stone in Manchuria. C. Chang and C. E. Wang.—p. 829.
Contribution to the Cystic Lithiasis Disease. O. Hueck.—p. 833.

Bulletin Médical, Paris

50: 605-618 (Sept. 12) 1936

*Barium Enema Controlled by Roentgen Rays: First Use in Diagnosis of Localization and Treatment of Acute Intestinal Invagination of Nursling. D. Ferey.—p. 607.

Barium Sulfate Enema in Treatment of Intestinal Invagination.—Ferey discusses the use of the barium sulfate enema in the localization and treatment of acute intestinal invagination in nurslings. The barium is retained simply by pinching the infant's anus between the thumbs. Its use for this purpose should be employed only in the presence of a surgeon, near a fully prepared operating room, and should be administered to the infant without any anesthesia. The barium must be allowed to flow in extremely slowly, since the intestine is fragile and edematous and may be easily torn. When given under the fluoroscope, it is easily possible to know at what point the barium ceases to ascend the intestine. In many instances the column of barium will, after a short delay, fill the loop of intestine that is the site of the invagination and thus make operative intervention unnecessary. It is advisable to give the enema as early as possible, although it is occasionally justifiable to use this method after an invagination has existed from twenty-four to thirty-six hours. Finally, the author believes that in those cases in which the diagnosis of invagination is doubtful because the symptoms are not all present, the barium enema may establish the diagnosis during the first few hours of its existence and before the appearance of the bloody stools. Even when this method fails as treatment, it will permit operating on the nursling while it is still in good condition.

Paris Médical

2: 177-204 (Sept. 19) 1936

Psychiatry in 1936: Clinical Review. N. Péron.—p. 177.
Primary Constitutional Anxiety States. J. Lévy-Valensi.—p. 185.
Puerperal Psychoses and Their Treatment. P. Guiraud and C. Nodet. —p. 194.
*Severe Late Syndrome of Penetrating Wounds of Skull in the Injured of the 1914 to 1918 War. R. Targowla.—p. 200.

Late Syndrome of Penetrating Wounds of Skull.—According to Targowla, the most important late symptoms resulting from penetrating wounds of the skull sustained in the war of 1914 to 1918 consist in the triad of hemiplegia, epilepsy and changes of mental state. The changes in mental state constitute the worst of these late symptoms from the standpoint of the individual, the family and society in general. The severe headaches, dimness of vision, intolerance to noise and other sensory phenomena, and the vertigo are important elements in the development of abnormal mental states of this nature. Extreme irritability, excessive emotion, feelings of inferiority and intellectual deterioration are the important end results.

Presse Médicale, Paris

44: 1433-1448 (Sept. 12) 1936

*Calcium Content of Cardiovascular System in Experimental Hyperparathyroidism. R. Leriche, A. Jung and S.-M. Dupertuis.—p. 1433.
Registration of Electrical Activity of Brain. A. Denier.—p. 1436.

Experimental Hyperparathyroidism.—Leriche and his colleagues report the result of a chemical and histologic study of the heart and blood vessels in experimental hyperparathyroidism. They gave injections of parathyroid extract to twenty-five young rats and fourteen rabbits. The extract used was that of Collip or Byla. Injections were made subcutaneously and varied in amounts of from 2 to 20 units daily. They were continued from two days to four and one-half months. The animals were fed a diet without restriction. Injection of Collip's parathyroid extract in young animals caused a considerable retardation and arrest in growth and killed a fairly large proportion of young rats. The adolescent rats withstood it better. The Byla extract caused much less arrest in growth and allowed longer survival periods. The entire heart of each was studied after removal of the blood. The vessels studied were the thoracic and the abdominal aorta and the femoral arteries. The animals were killed the day after their last injection. These studies showed that the quantity of calcium in the heart doubles after six daily injections of Byla's parathyroid extract. The calcium content of the heart reaches four times its normal value after four daily injections of Collip's parathyroid extract in the young rats. The same doses have no appreciable effect on the adolescent rabbits. The effect on the heart appears to result from the four first injections. If injections are continued for a longer period, the calcium content of the heart returns to practically normal. The calcium content of the aorta of the young rat reaches from two to four times its normal value after prolonged injections of extract, while in the adolescent rabbit from four to fifteen doses rarely caused a doubling of calcium values. It may be concluded from these observations that experimental hyperparathyroidism produces an increased calcium content of the heart and arteries which can be demonstrated both chemically and histologically. The quantity, the quality and the duration of the injection all affect the degree of hypercalcemia. The animal used and its age also appear to influence the course taken. Apparently, however, even after prolonged injections, the calcium deposit remains raised in the arteries, although it may have returned to normal in the myocardium.

Helvetica Medica Acta, Basel

3: 507-624 (Sept.) 1936

Vicious Circle of Colon and Secondary Megacolon of Isolated Loop in Transversosigmoidostomy. C. Henschen.—p. 507.
*Treatment of Edema. W. Löffler.—p. 525.
So-Called Lymphatic Reactions: Contribution to Glandular Fever. A. Studer.—p. 560.
The Changing Picture of Diabetes Mellitus. A. Schüpbach.—p. 573.
*Rôle of Gastro-Intestinal Tract in Hematopoiesis and in Anemia. O. Naegeli.—p. 581.

Treatment of Edema.—Löffler states that treatment of edema is no more than treatment of a symptom. Its removal, however, serves not infrequently to break the vicious circle by relieving the load on a diseased heart or by enabling the tissue fluids to return to the general circulation. Cardiac therapy is frequently identical with the therapy of edema. The treatment of the latter, however, is as a rule an indirect treatment only of the cardiac condition. Treatment of the heart assumes a primary importance in the treatment of cardiac edema. It is of no value in edema of nephritic or thyrogenous origin. Mercurial diuretics are indicated in cases in which edema is the prominent symptom. They are likewise indicated in cachectic edema. They are not to be used in the presence of renal insufficiency. While urea derivatives are the diuretics of choice in nephroses, mercurial diuretics may be employed as well and deserve consideration as such. Treatment along etiologic lines is indicated in cases of nephroses in which syphilis, tuberculosis or other chronic infection is a factor. Despite the advances in the treatment of acute nephritis, the appearance of edema cannot always be prevented. The effect of hunger and thirst therapy of acute nephritis is directed not so much against the edema as to insure the sparing of renal and adrenal functions. There exists no need for more diuretics. It is important to remember that rest in bed and limitation of fluid intake are imperative in the treatment of every form of edema.

The Gastro-Intestinal Tract and Hematopoiesis.—The part played by the gastro-intestinal tract in hematopoiesis is strikingly demonstrated in the case of pernicious anemia. The relationship, however, is far more complicated than was at first believed. It can be definitely stated that insufficient absorption of iron can lead to iron deficiency and that deficient absorption of still other substances may likewise produce anemia. The anemia of deficiency diseases is easily understood, since all the substances necessary for the building processes are, with the exception of oxygen, introduced into the organism by way of the stomach. Differentiation of various types of anemias has an important clinical and therapeutic significance. Naegeli wishes to emphasize that the gastric and liver substance is effective in pernicious anemia only. In contradistinction to the earlier view, this substance represents an antipernicious rather than an antianemic principle. The author has never observed in his clinical material a definite effect from liver or gastric substance feeding or a reticulocyte crisis in any of the anemias save that of the pernicious anemia.

Policlinico, Rome

43: 477-532 (Oct. 1) 1936. Medical Section

*Prostatic Test. D. Longo.—p. 477.
Function of Liver in Undulant Fever with Hepatomegaly. L. Alestra.—p. 484.
Autofecal Vaccines in Treatment of Bacterial Chronic Colitis and Intestinal Amebiasis in Anamebic Phase. L. Pontoni.—p. 502.
Chemistry of Cerebrospinal Fluid in Tetanus. R. Liberti.—p. 523.

Prostatic Test.—Longo states that gentle massage of the prostate (three or five minutes in a patient with a fasting stomach) results in producing leukocytosis if there is chronic or subacute inflammation of the structure. The test is positive (production of leukocytosis) in prostatic inflammation whether or not associated with pathologic conditions of the tonsils and also in the latter conditions, whether or not associated with the former. The test is contraindicated in acute prostatitis. It is of value in the diagnosis of prostatic inflammation and it shows a possible relationship between disease of the prostate and of the tonsils.

Rivista Italiana di Ginecologia, Bologna

19: 311-414 (Aug.) 1936. Partial Index

*Rapid Test (Chediak) for Diagnosis of Syphilis in Obstetric Cases. R. Pignoli.—p. 311.
Reactive New Growth Due to Anatomic and Functional Faults of Human Placenta. F. D'Erchia.—p. 335.
Neuromotor Activity of Uterine Segments: Experiments. G. Paroli.—p. 344.
Rapid Evolution of Adenoma of Breast in Pregnancy: Case. M. Titone.—p. 368.
Action of Pregnant Hormones on Human Ovary and Menstruation. M. Trettenero.—p. 380.

Dry Blood Test in Diagnosis of Syphilis.—Dahr's modified technic of the Chediak test for the serodiagnosis of syphilis was reported in the *Münchener medizinische Wochenschrift* 81:1723 (Nov. 8) 1934 (abstr. THE JOURNAL, Jan. 12, 1935, p. 166). The test is made with one drop of dry blood. Pignoli used it in 250 cases of syphilis and in 125 nonsyphilitic cases. The Chediak modified test has the same sensitivity of the Wassermann and Meinicke second clarification tests in primary and secondary syphilis and in neurosyphilis. It is much more sensitive than the Wassermann and Meinicke tests in tertiary syphilis, in congenital syphilis and especially in latent syphilis. The test does not give specific results in pregnancy, in the puerperium or in the blood of new-born infants. The author emphasizes the advantages of the test, especially its rapidity, simplicity, low cost and reliability. He advises systematic performance of the test for diagnosis of latent syphilis in women in maternity hospitals, new-born infants in asylums, patients in ambulatory clinics and, in emergencies, for blood transfusion. The test is one of orientation, the results of which are to be verified by those of other serologic tests.

Prensa Médica Argentina, Buenos Aires

23: 2249-2304 (Sept. 30) 1936. Partial Index

Bed for Patients Suffering from Fractures. E. Finochietto.—p. 2249.
Pulmonary Lobectomy in Treatment of Hemoptoic Bronchiectasis: Case. A. Ceballos.—p. 2268.
Block of Branch of Bundle of His with Paroxysms of Slow Pulse and Epileptiform Condition: Case. A. Camauer and J. Sacón.—p. 2275.
*Syndrome of Acute Appendicitis as only Symptom of Calculous Chronic Cholecystitis. Teresa Malamud.—p. 2277.
Technic for Upper Thoracoplasty. V. J. Bértola and L. F. Videla.—p. 2282.
Intercurrent Eclampsia: Expectant Treatment; Results in One Case. J. Dixon.—p. 2291.

Calculous Chronic Cholecystitis.—Malamud states that chronic pain of the right iliac fossa is a frequent symptom of calculous chronic cholecystitis. The pain may be accompanied by hepatic colic pain. It is intensified and gives a picture of acute appendicitis during aggravation of cholecystitis. In cases of this nature it is advisable to make clinical, chemical, biologic and roentgen examinations in order to find out the condition of the gallbladder before resorting to appendectomy. If the condition of the patient is grave, it is advisable to perform an appendectomy, making the incision large enough to be able to examine the gallbladder systematically. The appearance of a macroscopically normal appendix and of a pathologic condition of the gallbladder, especially acute cholecystitis and calculi, indicates cholecystectomy immediately after appendectomy. Two cases of calculous acute cholecystitis with a syndrome of acute appendicitis are reported.

Semana Médica, Buenos Aires

43: 893-960 (Oct. 1) 1936. Partial Index

Meningeal Forms of Acute Anterior Poliomyelitis: Cases. R. Cibils Aguirre.—p. 893.
Treatment of Placenta Praevia. J. A. Beruti and J. L. Ahumada.—p. 913.
Stelectomy: Technic of Lateral Route at Neck. A. R. Albanese and N. B. Turco.—p. 919.
Scurvy in Children: Diagnosis. C. P. Montagna.—p. 924.
*Diagnosis and Indications of Operation in Acute Mastoditis. A. M. Cavazzutti.—p. 928.

Acute Mastoiditis.—Cavazzutti states that, from the first days of acute suppurative otitis media, a mastoid reaction takes place. According to local and general factors, the mastoid reaction may regress within a week or become more intensified as mastoiditis complicates otitis. In the latter case mastoiditis completely develops in twenty-one days. The diagnosis of mastoiditis is made by the persistence and intensification of the symptoms of the mastoid reaction after the first week; external inflammation in the mastoid region (differentiated from the early mastoid reaction by the time of appearance of the inflammation in relation to the duration of the disease), persistence of deep arterial pulsation (which indicates the persistence of empyema), persistence of neuralgic pain irradiated to the corresponding trigeminal territory, lowering of the posterior superior wall of the external auditory canal and destruction of the mastoid bone, verified by roentgen examination of the bone. Fever, especially if high, beyond the first week is an unfavorable symptom which, alone or with other symptoms, may indicate an operation. Operation must be performed in all cases of acute mastoiditis in which the diagnosis is confirmed, but especially in mastoiditis complicated by subcutaneous abscess of the mastoid region and otitis of three weeks' duration with inflammation of the surface of the apophysis, or without apophyseal inflammation, but with subjective and objective symptoms of an unfavorable evolution and no tendency to a regression of the disease. Grave complications, whether or not fully developed, indicate immediate operation, regardless of the duration of the disease. Systematic performance of an operation during the first week of otitis to prevent the development of mastoiditis is inadvisable. Indications for operation during the first and second weeks depend on the evolution of the disease and the development of grave complications. All cases of otitis the evolution of which is not favorably modified by the fourth week are indications for an immediate operation, regardless of the absence of alarming symptoms. In cases in which the diagnosis is already confirmed but in which there are doubts as to the advisability of operating, the decision is based on the following principle: Operation for mastoiditis which could evolve satisfactorily without surgical intervention is better than losing patients who might have been saved by it.

Archiv für Kinderheilkunde, Stuttgart

108: 193-256 (Aug. 4) 1936

Fate of Nurslings with Tetany Who Were Treated at the Children's Clinic in Würzburg from 1918 to 1925. G. Herkert.—p. 193.
Spontaneous Remission in Congenital Hypothyroidism. J. Siegl.—p. 199.
Significance of Congenital Predisposition and of Acquired Pneumonias for Development of Bronchiectasis in Children. Gesine Edel.—p. 204.
*Epiphyseolysis in Distant End of Humerus as Birth Injury. O. Chiari.—p. 213.
Practical Evaluation of Ninni's Experimental Tuberculosis with Contribution to Question of Incidence of Open Pulmonary Tuberculosis in Children with Positive Tuberculin Tests. A. Netrasiri.—p. 217.
*Diagnosis and Differential Diagnosis of Pulmonary Abscess in Older Children. S. Müller.—p. 224.

Epiphyseolysis as Birth Injury.—Chiari reports the histories of two cases of birth injury in the region of the elbow; namely, an epiphyseolysis at the lower end of the humerus. In the first case the origin of the epiphyseolysis was obscure, for there was no record of a severe trauma during birth nor were there indications of a congenital inferiority of the skeleton. In the second case, which lies thirteen years back, the origin is more clear, since there was a transverse position, and the delivery was terminated by version and extraction.

Pulmonary Abscess in Older Children.—According to Müller, pulmonary abscesses are not as rare in older children as is generally believed. In adults as well as in children there

are considerable diagnostic difficulties in the differentiation from interlobar empyema, sacculated empyema and tuberculous cavities. The author first describes the clinical histories of two boys, aged 10, who were subject to bronchial asthma and who, following a pneumonic process, developed a pulmonary abscess which was cured in both cases following the surgical opening of the abscess. In these cases the physical as well as the roentgenologic examination revealed the pulmonary abscess. Then follows the history of a boy, aged 16, who had a severe diabetes and who developed a pulmonary abscess. The observations in this case suggested a tuberculous disorder, but the necropsy revealed a pulmonary abscess. The differentiation was difficult in this case. Tuberculosis as a rule does not present an isolated focus of decomposition in an otherwise intact lung, but tuberculous foci must be expected in other parts of the lung; and this was the case in this diabetic patient. In addition to a shadow in the right upper lobe, there was a focus in the left lower lobe. The necropsy revealed, however, that this focus was a bronchopneumonic one. The author further reports a case of spontaneously cured sacculated hydropneumothorax in a boy aged 7. He thinks that the hydropneumothorax, which was accompanied by bronchopneumonia and bronchiectasis, resulted from the bursting of an emphysema vesicle. In discussing the differential diagnosis of this case, he says that the boy presented at first the signs of pneumonia, and this diagnosis was roentgenologically corroborated. However, after the pneumonia had run its course, roentgenoscopy revealed in the left side of the thorax a fluid level and above it an air vesicle. The patient felt comparatively well and had no sputum, and thus an intrapulmonary process could be excluded. Finally, the author reports two cases of interlobar empyema (in a boy aged 8 and in an adult aged 43). Both these cases healed spontaneously following perforation of the empyema into the bronchus. In the case of the adult a tuberculous process could be excluded, in view of the rapid development and prompt disappearance of the process and the lack of scar formation. However, it was at first difficult to decide whether the process was an interlobar empyema or a pulmonary abscess in juxtaposition to the interlobar cleft. Several roentgen exposures and other aspects of the case finally disclosed it to be a parapneumonic and metapneumonic empyema in the middle interlobar cleft.

Archiv für klinische Chirurgie, Berlin

185: 587-771 (Aug. 11) 1936. Partial Index

*Thyroid Activity and Fracture Healing. H. Eitel and E.-W. Lexer.—p. 587.
Late Results in Two Cases of Extensive Resection of Small Intestine. W. Noetzel.—p. 599.
Spontaneous Hypoglycemia: Case. M. Munakata.—p. 624.
Surgical Treatment of Congenital Webbed Skin. T. Matolcsy.—p. 675.
Perforating Ulcer of Foot and Sympathetic Nervous System. V. Sanchis-Perpiñá.—p. 682.
*Causes of Death in High Intestinal Obstruction in Experimental Animal. J. Bottin.—p. 705.

Thyroid Activity and Fracture Healing.—According to Eitel and Lexer, clinical observations have established the favorable effect of thyroid substance on the healing of fractures. It was believed that this effect was brought about by an increase in the hyperemia about the fractured ends and that this hyperemia was caused by the activity of the thyroid secretion. To test the correctness of this assumption the authors experimented with hyperthyroidized animals in which they produced subcutaneous fractures. They found that the hyperemia took place earlier and lasted longer in animals treated with thyrotropic hormone. They also found that thyroxine acted in a similar manner. The effect produced by both substances is based on their ability to raise the metabolism. They likewise had undoubted clinical demonstration of the stimulating effect of the thyrotropic hormone on delayed union of fractures.

Death in High Intestinal Obstruction.—Bottin concludes, on the basis of numerous animal experiments, that death in experimental high intestinal obstruction is caused by two main factors: intoxication and water and salt deprivation. Infusions of large amounts of physiologic solution of sodium chloride delay death in animals with a high intestinal obstruction by seven and, at times, fifteen and even twenty-one days. Only the resection of the duodenal portion of the pancreas is capable of prolonging the life of the experimental animal up to the thirtieth day. The author has utilized the method of exchange of blood between an animal with experimental high intestinal obstruction and a normal animal since 1931. Exchange of blood between a dog first deprived of water and salt for sixteen hours and a dog severely damaged by intestinal obstruction led in the former to total anuria and death without other organic changes. An animal not deprived of water and salt tolerated the blood exchange a longer time. If the animal with high intestinal obstruction was first given a copious infusion of physiologic solution of sodium chloride, the recipient, though prepared with deprivation of water and salt, suffered little from blood exchange, provided the donor has not been rendered too toxic by the obstruction. After seventeen days of obstruction, the blood exchange was fatal to the recipient unless he was treated on the interruption of blood transfusion with copious transfusion of physiologic solution of sodium chloride. Two animals deprived of water and salt suffered no damage when subjected to exchange of blood. A healthy dog, and even one deprived of water and salt, will tolerate the blood of a dog with high intestinal obstruction as long as the latter is still in good condition. The removal of the duodenal portion of the pancreas of the dog with high intestinal obstruction improved the recipient's chance to survive. Transfusion of blood from a dog that had had a high intestinal obstruction for twenty-five days was always fatal to the recipient. Toxic manifestations became evident soon after the intestine had been obstructed. The ensuing loss of water and salts interferes with the processes of detoxification. The removal of the pancreas, the chief focus of intoxication, prolongs the life of the experimental animal up to a certain point, beyond which there develop toxic substances from other sources.

Medizinische Klinik, Berlin

32: 1061-1092 (Aug. 7) 1936. Partial Index

Physical Exercises and Heart. F. Külbs.—p. 1061.
Obstetrics in Home and Clinic. F. C. Geller.—p. 1064.
*Apparent Change in Blood Group in Patient with Leukemia in Case of Intolerance of Blood from Universal Donor. W. Neumann and W. Neugebauer.—p. 1067.
Headache and Its Physical Biologic Treatment. Hanse.—p. 1071.
Severest Argyria Universalis Following Internal Use of Silver Nitrate Solution: Case. L. M. Kugelmeier.—p. 1073.
*Experiences with Calcium-Quinine Treatment of Pneumonias During Childhood. Annemarie Sebian.—p. 1075.
*Experimental Studies on A Avitaminosis. M. Frank.—p. 1077.

Apparent Change in Blood Group.—Neumann and Neugebauer discuss the history of a patient with chronic lymphatic leukemia in whom, by means of the test serums that are available on the market, the blood group AB had been determined. In repeated transfusions it was noted that the patient tolerated blood from B donors well, whereas he developed fever in response to the transfusion of A blood. It was decided to determine the blood group once more and at this time only the B agglutinogen could be detected. Repeated examinations with other test serums again and again revealed only the B agglutinogen. This case demonstrates that for the determination of blood groups merely the use of purchasable test serums is inadequate. The authors emphasize that, in every case of blood group determination, the serum of the patient should be tested as well. When the patient whose case is reported later required further blood transfusions, a donor of the so-called universal group (O) was taken. This transfusion, however, caused a severe hemolysis, which in turn resulted in hemoglobinuria. In the subsequent hemolysin cross test the erythrocytes of the patient were almost momentarily hemolyzed. Thus this case demonstrates the absolute necessity of the hemolysin cross test in blood transfusion, particularly if a so-called universal donor of group O is to furnish the blood. Following a discussion of the serologic aspects of this case, the authors emphasize that in the various types of anemia the group O should be used only if it represents the identical group. Moreover, in any case of blood transfusion the use of blood of the same group is always the method of choice.

Calcium-Quinine Treatment of Pneumonias During Childhood.—Sebian reports that the calcium-quinine therapy of pneumonia was used in thirty cases at the children's clinic of the German University in Prague. The medicament was always administered by intramuscular injection in daily doses

of 5 cc. In fourteen cases of lobar pneumonia the calcium-quinine therapy was found to effect neither a reduction in the duration of the disease nor any other improvement. In the sixteen patients with bronchopneumonia it produced much better results. To be sure, in cases of bronchopneumonia in which the calcium-quinine was not given before the fourth day, the disease took the usual course; but in cases in which it was given within the first three days, the fever fell critically on the following day and the general condition of these patients was favorable.

Experimental Studies on A Avitaminosis.—In summarizing his experimental studies, Frank states that with the same deficiency diet rats develop the symptoms of A avitaminosis sooner during the early part of the year than during summer and early fall. The vitamin A is subject to seasonal fluctuations in these animals. It is lowest in the late fall and winter months, begins to rise in February, and reaches its highest values in the summer months, as the result of the presence of large amounts of the vitamin or of the previtamin in the diet. The beginning rise in the vitamin content during February cannot be explained by a greater intake in the food and must be due to other than alimentary factors.

Strahlentherapie, Berlin

56: 541-720 (Aug. 15) 1936. Partial Index

Experiences in Treatment of Lymphogranulomatosis. W. Braensch.—p. 541.
*Indications for Ray Treatment and for Surgery in Fibromyomas of Uterus. C. Béclère.—p. 548.
*Total Roentgen Therapy. J. Belot.—p. 560.
Roentgen Treatment of Endarteritis Obliterans. P. Cottenot.—p. 569.
Roentgen Treatment of Cancers and Periodicity of Epithelial Changes. H. Coutard.—p. 577.
Malignant Bone Tumors Cured by Irradiation. A. U. Desjardins.—p. 583.
Wilson Exposures on Penetration of Roentgen Rays Through Material. L. Grebe.—p. 603.

Ray Treatment and Surgery in Fibromyomas of Uterus.—Claude Béclère points out that Antoine Béclère said in 1912 that roentgen therapy can be tried in nearly all fibromyomas of the uterus, without consideration of form and size of the tumor and of the age of the patient. To be sure, a correct diagnosis of fibroma is an absolute requirement. The author thinks that, if the height of the tumor above the symphysis is regularly measured at intervals of eight days an erroneous diagnosis will soon be discovered and the ray therapy can be interrupted and an operation can be done. In an evaluation of the advantages and disadvantages of ray treatment and surgical treatment, the author lists the following factors as the advantages of roentgen therapy: absence of mortality, absence of pain and no interruption in the working capacity. The disadvantages of roentgen treatment are the possibility of a diagnostic error, incomplete reduction of the tumor and possibility of later complications. In discussing surgical treatment, the author mentions as the chief advantages that it verifies the diagnosis, that it makes a myomectomy possible, that it permits the complete removal of a tumor no matter how large and that it permits a radical treatment which will prevent later complications. However, these distinct advantages involve just as great disadvantages; namely, mortality, pains and interruption of the working capacity. Further, the author gives his attention to the indications for roentgen therapy as well as for operation and then discusses the complications that arise during and after treatment. In the difficult differential diagnosis of the uterine hemorrhages after completion of the treatment, the persistence or cessation of hot flushes is an important symptom. The author says that Antoine Béclère directed attention to this symptom and demonstrated that it permits a decision as to whether the hemorrhage is only a return of the menstrual flow or an abnormal metrorrhagia. Thus it will be known whether the irradiation should be resumed or avoided or whether a secondary carcinoma of the corpus uteri should be searched for.

Total Roentgen Therapy.—Belot points out that total irradiation is possible only as distant irradiation. To be sure, the two terms should not be confused, since distant irradiations include all those that are given from a distance of more than 50 cm. In total roentgen therapy it requires a distance of about 3.5 meters in order to obtain a uniform irradiation for an adult of average size. The total roentgen therapy is advisable for disorders that involve the entire organism, for instance, diseases of the blood and of the hematopoietic organs, also for dermatoses, such as erythrodermias, certain forms of generalized edema, pruritus, mycosis fungoides and the lymphocytomas of the skin. The hardness of the rays and the filtration that is to be used in each case must be determined on the basis of the depth of the disease process. In diseases of the blood, a hard irradiation is required which, in order to reduce the intensity, is filtered to a high degree of homogeneity. In dermatoses, on the other hand, in which the irradiation of the deeper tissues is to be reduced to a minimum, soft rays are used. The author applied the total roentgen irradiation usually with the roentgen tube high up, the patient lying on a mattress on the floor. After discussing certain details of the technic, he gives his attention to the indications for the total roentgen irradiation. He admits that these are not strictly defined as yet. So far, it is advisable in only a limited number of disorders, but in these it is definitely superior to the irradiation of only parts of the body.

Wiener klinische Wochenschrift, Vienna

49: 1245-1272 (Oct. 9) 1936. Partial Index

Clinical Significance of Fat Embolism. R. von Oppolzer.—p. 1245.
Sleep and Hibernation. H. Hoff.—p. 1248.
*Spontaneous Pneumothorax. A. Schick.—p. 1250.
*Traumatic Atrophy of Fat, Insulinlipodystrophy. M. Rosenberg and F. Berliner.—p. 1253.
Effect of Work on Psychic State. J. Aiginger.—p. 1256.
Roentgenology and Hypophysis. A. Schüller.—p. 1259.

Spontaneous Pneumothorax.—According to Schick there exist, besides the traumatic variety, two distinct types of spontaneous pneumothorax, the symptomatic and the idiopathic. Symptomatic spontaneous pneumothorax may develop in the course of any destructive pulmonary lesion. It is observed most frequently in tuberculous disease of the lung (90 per cent) but also in gangrene, abscess, infarct or tumor of the lung. The author calls attention to the occurrence of the so-called benign or more correctly idiopathic spontaneous pneumothorax developing in the absence of signs or symptoms of any disease process in the lung. Because of the absence of pulmonary signs and the radiation of pain into the upper part of the abdomen or the cardiac area, the onset of this form of pneumothorax may be confused with an attack of angina pectoris. Days later there may develop a tension pneumothorax with displacement of the mediastinal structures and dyspnea. It has been observed predominantly in younger persons of the male sex. A tendency to recurrence and a strong familial predisposition were noted. The prognosis is almost always good. According to the author, B. Fisher was first to call attention, in a recent communication, to the existence of peculiar emphysema-like structures in the pulmonary apexes which he had observed in necropsies. He believed that the rupture of these was responsible for the origin of so-called idiopathic spontaneous pneumothorax. Fisher believed these structures to be the result of a chronic inflammatory process giving rise to localized atrophy of the alveolar tissue, to compression of bronchioles by proliferating connective tissue, and to a peculiar valve formation at the base of such vesicles through cicatricial contraction. A somewhat different view is advanced by Schminke and by Kjaergaard, who regard congenital pulmonary cysts as the etiologic factor. The rupture of a superficially located cyst or cysts gives rise to pneumothorax. They regard these cysts as developmental congenital anomalies of pulmonary alveoli. The author reports one case from the clinic of Julius Bauer in Vienna in which he had the opportunity to demonstrate on the basis of clinical data and roentgenologic peculiarities the pulmonary cyst or apical cicatricial vesicle (B. Fisher) as the cause of an idiopathic spontaneous pneumothorax.

Traumatic Fat Atrophy.—According to Rosenberg and Berliner, Depisch was the first to describe, in 1926, local disappearance of fat in diabetic patients on insulin treatment. Depisch named it "insulinlipodystrophy." The one observation reported in common by several authors was that the lesion occurred much more frequently in women than in men. Two possibilities were advanced as to its etiology. One was that of a specific as yet unexplained hormone action of insulin,

and the other that of a chemical or traumatic damage of the act of injection. Graham and Carmichael believed that a certain amount of the lipolytic ferment in the insulin, because of its derivation from the pancreas, was responsible for the local fat necrosis. The presence of such a ferment in the insulin, however, was not demonstrated. Avery believed the necrosis to be the result of a long continued local inflammatory process resulting from injections. This view was not confirmed by histologic studies. The authors in their study of the subject found that among 4,000 diabetic patients treated on insulin therapy the incidence of local fat atrophy was less than 0.5 per cent. The predisposition on the part of the female sex was marked. There were twenty-seven of the female and five of the male sex. The age of the patient and the duration of diabetes played no part in the incidence. Duration of the injection treatment, however, was an important factor. Fat atrophy was not seen in patients who received injections less than three months. In a study of 1,000 consecutive patients admitted to a dispensary, the authors observed the same phenomenon in four nondiabetic patients and in one with mild diabetes. None of the five received injections of any kind. Four were women. In three the area of dystrophy on the thigh came in contact with the rim of a tub in which the patients did their daily washing of clothes. Because of a similar frequency in the groups and the clear evidence of trauma in the second group, the authors are inclined to ascribe the phenomenon of local fat atrophy to oft repeated trauma rather than to some local or general effect of insulin.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

36: 1-159 (No. 141) 1936. Partial Index

Intracardial Injections of Epinephrine in Chloroform Syncope. Ya. M. Britvan.—p. 1.
Comparative Evaluation of Modifications of the Second Billroth Operation of Gastric Resection. A. A. Vikhman.—p. 21.
Contraindications to Removal of Varicose Veins of Lower Extremities. M. A. Egorov.—p. 31.
Local Avitaminosis. S. D. Balakhovskiy, L. A. Khimenkova and F. M. Cherkassov.—p. 49.
*Phrenico-Exeresis. A. G. Gilman.—p. 65.

Evaluation of Phrenico-Exeresis.—Of 220 patients with pulmonary tuberculosis subjected to phrenico-exeresis at the Sanatorium Livadia, Gilman was able to make a follow-up study of ninety-four. He did not find many deviations from the normal course in the phrenic nerve. Those encountered in the course of the operation are due to the position of the patient's neck and to altered relationships of the tissues brought about by operative manipulations. Anatomic studies alone were to be relied on for the study of anomalies of the course of the phrenic nerve. The extent of the nerve excised varied from 10 to 40 cm. There is a relationship between the degree of paralysis of the diaphragm attained and the therapeutic effect. Clinical cure was obtained in 13.8 per cent of the patients, improvement in 29.8 and no change in the condition of 15.9; 11.7 became worse and 28.8 died in from one to six years. The author believes that the operation of phrenico-exeresis is indicated in isolated lesions of the base, with or without tissue destruction, but with tubercle bacilli in the sputum; in recent limited processes of other portions of the lung when induction of artificial pneumothorax is not possible; in the presence of blood spitting or hemorrhages, and when artificial pneumothorax cannot be induced and thoracoplasty is contraindicated because of the condition of the opposite lung. Phrenico-exeresis has no permanent effect in diffuse chronic cirrhotic lesions with cavities, in which the operation has only a palliative character. Phrenico-exeresis is not to be recommended as a preliminary stage to thoracoplasty. In the presence of adhesions of the base and apical involvement, phrenico-exeresis will aid a partial artificial pneumothorax in bringing about partial collapse of the lung and of a cavity. Phrenico-exeresis cannot be considered a substitute for thoracoplasty in cases in which the latter is indicated. Phrenico-exeresis may give a good result in extensive chronic lesions if combined with a prolonged sanatorium management. The author advises alcoholization of the phrenic nerve in cases in which a satisfactory effect may be anticipated in from four to six months or when total paralysis of the diaphragm is not desirable because of the condition of the opposite lung.

Hospitalstidende, Copenhagen

79: 893-920 (Sept. 1) 1936

Cell Number and Cell Counting in Cerebrospinal Fluid. H. Jessen.—p. 893.
*Tumors Originating from Striated Musculature: Case of Rhabdomyosarcoma. J. Engelbreth-Holm.—p. 905.
Attempt at Serum Treatment of Chicken Leukosis. J. Engelbreth-Holm, A. Rothe Meyer and E. Uhl.—p. 915.

Tumors Originating from Striated Musculature.—Engelbreth-Holm states that benign rhabdomyomas with striation are found practically only as congenital tumors in the heart and, because of their localization, have a grave prognosis. Besides, in striated musculature rhabdomyosarcomas most often appear in the urogenital tract, fifty such cases being known (Geschichter). He has found thirty-six cases of rhabdomyosarcomas in striated musculature in the literature; of the twelve in which sex and age were named, eight were in male and four in female patients, aged from 7 months to more than 50 years. Rhabdomyosarcomas are highly malignant, with marked invasive growth, frequent metastasis and usually recurrence after attempted extirpation, and are little or not at all sensitive to irradiation. Macroscopically they present the fishmeat appearance typical of sarcomas; microscopically the picture is polymorphic but there are always more or less numerous larger irregular cells with striated fibrils. Degenerative phenomena are frequent. The case described was that of a man, aged 75, in whom gradually developing total paresis of the left facialis set in two years before admission, with an increasing swelling on the left side of the neck, impaired hearing in the left ear and pronounced loss of weight. The swelling was firm, nodular, not tender, and from it a firm nodular strand extended into the left supraclavicular region, where a gland of the size of a pigeon's egg was found, together with smaller glands. In the left submaxillary region was a gland of hazelnut size. The tumor seemed to diminish slightly on roentgen treatment, but in three weeks metastases to the throat were noted. Rapid aggravation followed, symptoms of cardiac insufficiency appeared and the tumor of the neck increased in size. Death occurred seven weeks after admission. The histologic diagnosis was rhabdomyosarcoma. The author says that, while primary tumors in striated musculature must in some cases develop from broken-off germs, malignant myosarcomas can develop from "normal" muscle tissue as the result of exogenic influence.

Ugeskrift for Læger, Copenhagen

98: 853-884 (Sept. 10) 1936

Experiences with Pantocain Anesthesia. K. Eriksen.—p. 853.
Transient (Unspecific) Wassermann-Kahn Reaction. P. Krag.—p. 855.
Adjustment of Hemeralopia Charts. G. F. Vraa-Jensen.—p. 859.
*Fatal Intoxication with Trichlorethylene in Man with Scrofula and Miliary Tuberculosis: Medicolegal Casuistic Number 5. E. H. Hansen.—p. 862.
*Investigations on Occurrence of Hemolytic Streptococci in Throat in Patients With and Without Disturbances in Upper Respiratory Tract: Their Significance in Origin of Angina. H. Rasmussen.—p. 864.

Fatal Intoxication with Trichlorethylene.—Hansen says that this case is the first instance of fatal trichlorethylene poisoning to be reported in Denmark. The patient was one of two men occupied, mostly in a reclining position, with clean-up work in the small space under the floor of the engine room of a motorboat, and exposed to the fumes from the room above, where trichlorethylene, heated to about 100 C., was being used in cleaning. The patient's resistance was undoubtedly lessened by the tuberculosis of the mediastinal glands and miliary spread in the lungs and pleura, liver and spleen disclosed on necropsy. The fellow worker, suffering from trichlorethylene intoxication, recovered after a protracted course.

Hemolytic Streptococci in Throat.—In sixty-one out of ninety-three patients with disturbances of the upper respiratory tract and eleven out of twenty-six without such disorders, hemolytic streptococci were found in the throat. Comparison of the results on admission and on discharge showed the streptococci to be inconstant. In this material nine cases of angina occurred; in all hemolytic streptococci were present in the throat, mostly in large numbers or in pure culture, and in half of the cases hemolytic streptococci had been established before the angina. Seven of the cases were from a large ward and two from a small one. Rasmussen says that, since nosocomial anginas mainly occur in large wards, the cause appears to be an exogenic infection and it is doubtful that the hemolytic streptococci are the active virus.